Florida Department of Transportation
District VII

DESIGN-BUILD
REQUEST FOR PROPOSAL
for
I-75 (SR 93) from SR 56 to SR 54, Pasco County

Financial Projects Number(s): 410909-4-52-01
Federal Aid Project Number(s): 0751-110 I
Contract Number: E7I43

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ATTACHMENTS

The Attachments listed below are hereby incorporated into and made a part of this Request for Proposal (RFP) as though fully set forth herein.

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    ITSFM046 Electronic Feedback Speed Sign Form Rev7-10
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    ITSFM050 Cable Barrier Warning System Form Rev9-10
    ITSFM051 Travel Time System Form Rev9-10
    ITSFM052 Highway Advisory Radio Sign Form Rev9-10

REFERENCE DOCUMENTS

The following documents are being provided with this RFP. Except as specifically set forth in the body of this RFP, these documents are being provided for reference and general information only. They are not being incorporated into and are not being made part of the RFP, the contract documents or any other document that is connected or related to this Project except as otherwise specifically stated herein. No information contained in these documents shall be construed as a representation of any field condition or any statement of facts upon which the Design-Build Firm can rely upon in performance of this contract. All information contained in these reference documents must be verified by a proper factual investigation. The bidder agrees that by accepting copies of the documents, any and all claims for damages, time or any other impacts based on the documents are expressly waived.

Updated Level I Hazardous Material and Contamination Investigation, 2009
RWIS Siting Guidelines dated November 2008
Final Design Plans: FPID 408459-4-52-01
- Limits: I-75 (SR 93) from SR 56 to CR 54
- Originally Let 2011

Final Design Plans: FPID 410909-9-52-01 & 408459-3-52-01
- Limits: SR 93A (I-75) & SR 93 (I-75) from Bruce B. Downs Blvd. to S.R. 56
- Originally Let 2011

Final As-Built Plans: FPID 258413-3-52-01
- Limits: S.R. 93 from North of Livingston Ave. to I-275/I-75 APEX
- Originally Let 2011

Final Design Plans: FPID 407944-1-52-01
- Limits: S.R. 93 (A) (I-75) Northbound Rest Area Rehabilitation
- Originally Let 2010

Final Design Plans: FPID 407944-2-52-01
- Limits: S.R. 93 (A) (I-75) Southbound Rest Area Rehabilitation
- Originally Let 2010

Design Plans: FPID 430898-1-52-01
- Limits: SR 56 from W. of I-75 to SR 581 (Bruce B Downs Blvd)
- In Design, Anticipated letting July 2014

Final Design Plans: FPID 254677-1-52-01
- Limits: Design-Build Push Button I-75 ITS
- Originally Let 2012

Final As-Built Plans: County Project Number C-3625.10
- Limits: S.R. 54 from Oakley Blvd. to E of I-75
- Originally Let 2010

Right of Way Control Survey 408459-3 & 408459-4
- Limits: I-75 (SR 93) from Hillsborough County Line to SR 54

Right of Way Maps 408459-4
- Limits: I-75 (SR 93) from SR 56 to CR 54

SR 54 Permit Plans 2004-A-798-5, Pasco County
- Limits: Magnolia Blvd to CR 581
- Approved 2004

Geotechnical Reports:

- 408459-4 Recommended Design Parameters for Box Culvert and Wing Wall Design (July 2009)
- 408459-4 High Mast Lighting Structures Report (October 2010)
- 408459-4 Sign Structures Report (October 2010)
- 408459-4 Pond Soil Survey Report (October 2009)
- 421831-4 Final Pond Soil Survey Report (October 2007)
- 421831-4 Geotechnical Structures Report (October 2007)
- 421831-4 Recommended Design Parameters for Box Culvert Extension (October 2007)
- 408459-4 & 421831-4 Final Roadway Soil Survey Report (October 2007)
- 408459-4 Temporary Sheet Pile Wall Structures Report (October 2010)

I. Introduction.

The Florida Department of Transportation (Department) has issued this Request for Proposal (RFP) to solicit competitive bids and proposals from Proposers for the Design and Construction of ITS facilities for I-75 (SR 93) from SR 56 to SR 54.

Description of Work

ITS Freeway Management for Tampa Bay SunGuide^{TM} on I-75 (S.R. 93) from S.R. 56 to S.R. 54. The project length is 3.446 miles. The proposed project will be a portion of an overall system that will provide ITS encompassing the I-75 corridor in Hillsborough and Pasco County. The Design-Build Firm shall coordinate with other construction projects listed per Section IV. Design and Construction Criteria under J. Sequence of Construction.

The Design-Build Firm shall design and prepare a complete set of construction plans, specifications package, and technical special provisions for all ITS devices and supporting infrastructure and equipment within the scope of this project. Elements of work shall include providing: communications design, ITS software and hardware design, technical specifications, design plans, traffic control plans, engineer's cost estimates, utility coordination, quantity computation booklet, design documentation report, environmental permitting, development of system test and acceptance procedures, and incidental items as applicable to this project. The Design-Build Firm shall be responsible for survey, geotechnical investigation, subsurface utility engineering (SUE), design, acquisition of all permits not acquired by the DEPARTMENT, and any required modification of permits acquired by the DEPARTMENT.

Design and construction shall include the following:

1. Color Dynamic Message Signs (DMS) (2).
2. CCTV Cameras spaced at a minimum of one mile interval to obtain visual coverage of alignment.
3. Microwave Video Detection System (MVDS) spaced at one-half mile intervals.
4. Arterial Dynamic Message Signs (ADMS) spaced at minimum one-half mile off the interchange to one mile intervals on arterials approaching I-75 interchange.
5. Highway Advisory Radio (HAR).
6. Record Keeping with FMT/ITS FM.
7. Required Traceability Verification Matrix (RTVM).
8. Project ITS Architecture (P-ITSA).
9. Project System Engineering Management Plan (P-SEMP).
10. Road Weather Information System (RWIS).

The design services provided by the Design-Build Firm shall include the following:

1. Preparation of complete Plans, Specifications & Estimates (PS & E) for the construction contract(s) to install the subsystems that are within the scope of the project.
2. Hardware configuration analysis and design including system architecture, interfaces, communications, equipment, devices, and computers. This design shall be consistent with STATEWIDE and DISTRICT SEVEN ITS projects.
3. Development of proper sequencing and coordination of the various subsystem deployments.
4. Development of system test and acceptance procedures.
5. ITS design coordination.
6. The Design/Build Team shall review the District Seven ITS Construction Checklists and assist the Construction Engineering and Inspection (CEI) company to complete the checklists thoroughly and accurately.
7. Integration inclusive of the conversion of the system to communicate with Tampa Bay SunGuide™.
8. Coordinating and securing any local agency agreement required to install ADMS and CCTVs along CR 54.

A. Design-Build Responsibility

The Design-Build Firm shall be responsible for survey, geotechnical investigation, subsurface utility engineering (SUE), design, preparation of all documentation related to the acquisition of all permits not acquired by the Department, preparation of any and all information required to modify permits acquired by the Department if necessary, maintenance of traffic, demolition, and construction on or before the Project completion date indicated in the Proposal. The Design-Build Firm shall identify both Sunshine State One Call subscribers and non Sunshine State One Call subscribers. The Design-Build Firm shall coordinate all utility relocations and reimburse all utility relocation costs for any Utility Agency/Owner (UA/O) determined to be eligible for reimbursement in Section VI.C of this RFP.

The Design-Build Firm shall be responsible for compliance with Design and Construction Criteria (Section VI) which sets forth requirements regarding survey, design, construction, and maintenance of traffic during construction, requirements relative to Project management, scheduling, and coordination with other agencies and entities such as state and local government, utilities and the public.

The Design-Build Firm shall be responsible for reviewing the approved Environmental Document of the PD&E Study.

The Design-Build Firm is responsible for coordinating with the District Environmental Office any engineering information related to Environmental Reevaluations. The Design-Build Firm will not be compensated for any additional costs or time associated with Reevaluation(s) resulting from proposed design changes.

The Design-Build Firm may propose changes which differ from the approved Interchange Proposal Report (if applicable) and/or the Project Development & Environment (PD&E) Study. Proposed changes must be coordinated through the Department. If changes are proposed to the configuration, the Design-Build Firm shall be responsible for preparing the necessary analyses and documentation required to satisfy requirements to obtain approval of the Department and , if applicable, FHWA. The Design-Build Firm shall provide the required documentation for review and processing. Approved revisions to the configuration may also be required to be included in the Reevaluation of the National Environmental Policy Act (NEPA) document or State Environmental Impact Report (SEIR) Reevaluations, per Section M (Environmental

Services/Permits/Mitigation) of the RFP. The Design-Build Firm will not be compensated for any additional costs or time resulting from proposed changes.

The Design-Build Firm shall examine the Contract Documents and the site of the proposed work carefully before submitting a Proposal for the work contemplated and shall investigate the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished and as to the requirements of all Contract Documents. Written notification of differing site conditions discovered during the design or construction phase of the Project will be given to the Department's Project Manager.

The Design-Build Firm shall examine boring data, where available, and make their own interpretation of the subsoil investigations and other preliminary data, and shall base their bid on their own opinion of the conditions likely to be encountered. The submission of a proposal is prima facie evidence that he Design-Build Firm has made an examination as described in this provision.

The Design-Build Firm shall demonstrate good Project management practices while working on this Project. These include communication with the Department and others as necessary, management of time and resources, and documentation.

B. Department Responsibility

The Department will provide contract administration, management services, construction engineering inspection services, environmental oversight, and quality acceptance reviews of all work associated with the development and preparation of the contract plans, permits, , and construction of the improvements. The Department will provide Project specific information and/or functions as outlined in this document.

In accordance with 23 CFR 636.109 of the FHWA, in a Federal Aid project, the Department shall have oversight, review, and approval authority of the permitting process.

The Department will determine the environmental impacts and coordinate with the appropriate agencies during the preparation of NEPA or SEIR Reevaluations. For federal projects, the Department will coordinate and process Reevaluations with FHWA.

II. Schedule of Events.

Below is the current schedule of the events that will take place in the procurement process. The Department reserves the right to make changes or alterations to the schedule as the Department determines is in the best interests of the public. Proposers will be notified sufficiently in advance of any changes or alterations in the schedule. Unless otherwise notified in writing by the Department, the dates indicated below for submission of items or for other actions on the part of a Proposer shall constitute absolute deadlines for those activities and failure to fully comply by the time stated shall cause a Proposer to be disqualified.

Date	Event
3-25-13	Advertisement
4-15-13	Expanded Letters of Interest for Phase I of the procurement process due in District Office by 5:00 pm local time
5-2-13	Proposal Evaluators submit Expanded Letter of Interest Scores to Contracting Unit 5:00 pm local time
5-6-13	Contracting Unit provides Expanded Letter of Interest scores and

	Proposal Evaluators comments to Selection Committee 5:00 pm local time
5-10-13	Public Meeting of Selection Committee to review and confirm Expanded Letter of Interest scores 10:00 am local time
5-13-13	Notification to Responsive Design-Build Firms of the Expanded Letter of Interest scores 5:00 pm local time
5-16-13	Deadline for all responsive Design-Build firms to affirmatively declare intent to continue to Phase II of the procurement process 5:00 pm local time
5-20-13	Shortlist Posting 12:00 pm local time
5-24-13	Final RFP provided to Design-Build firms providing Affirmative Declaration of Intent to continue to Phase II of the procurement process
6-6-13	Pre-proposal meeting at 10:00 am local time in Production CR, 11201 N. McKinley Drive, Tampa, FL 33612. **All impacted Utility Agency/Owners are to be invited to the mandatory Pre-proposal meeting.**
6-7-13	Utility Pre-proposal Meeting facilitated by the District Utility Engineer at 8:00 am local time in Production CR, 11201 N. McKinley Drive, Tampa, FL 33612.
6-11-13	Deadline for Design-Build Firm to request participation in One-on-One Alternative Technical Concept Discussion Meeting No. 1
6-11-13	Deadline for Design-Build Firm to submit preliminary list of Alternative Technical Concepts prior to One-on-One Alternative Technical Concept Discussion Meeting No. 1
6-13-13 6-18-13	One-on-One Alternative Technical Concept Discussion Meeting No. 1. 90 Minutes will be allotted for this Meeting.
6-19-13	Deadline for Design-Build Firm to request participation in One-on-One Alternative Technical Concept Discussion Meeting No. 2
6-19-13	Deadline for Design-Build Firm to submit preliminary list of One-on-One Alternative Technical Concepts prior to Alternative Technical Concept Discussion Meeting No. 2
6-20-13 6-25-13	One-on-One Alternative Technical Concept Discussion Meeting No. 2. 90 Minutes will be allotted for this Meeting.
6-27-13	Deadline for submittal of Alternative Technical Concept Proposals 5:00 pm local time.
7-9-13	Final deadline for submission of requests for Design Exceptions or Design Variations
7-9-13	Deadline for submittal of questions, for which a response is assured, prior to the submission of the Technical Proposal. All questions shall be submitted to the Pre-Bid Q&A website.
7-11-13	Deadline for the Department to post responses to the Pre-Bid Q&A website for questions submitted by the Design-Build Firms prior to the submittal of the Technical Proposal.
7-18-13	Technical Proposals due in District Office by 2:30 p.m. local time
7-24-13	Deadline for Design-Build for to “opt out” of Technical Proposal Page Turn meeting.
7-25-13	Technical Proposal Page Turn Meeting. Times will be assigned during the Pre-Proposal Meeting. 30 Minutes will be allotted for this Meeting.
8-1-13	Question and Answer Session. Times will be assigned during the pre-proposal meeting. One hour will be allotted for questions and responses.

8-8-13	Deadline for submittal of Written Clarification letter following Question and Answer Session 5:00 pm local time
8-8-13	Deadline for submittal of questions, for which a response is assured, prior to the submission of the Price Proposal. All questions shall be submitted to the Pre-Bid Q&A website.
8-14-13	Deadline for the Department to post responses to the Pre-Bid Q&A website for questions submitted by the Design-Build Firms prior to the submittal of the Price Proposal.
8-22-13	Price Proposals due in District Office by 2:30 pm local time.
8-22-13	Public announcing of Technical Scores and opening of Price Proposals at 2:30 pm local time in Executive CR, 11201 N. McKinley Drive, Tampa, FL 33612
8-30-13	Public Meeting of Selection Committee to determine intended Award
8-30-13	Posting of the Department's intended decision to Award (will remain posted for 72 hours)
9-11-13	Anticipated Award Date
10-2-13	Anticipated Execution Date

III. Threshold Requirements.

A. Qualifications

Proposers are required to be pre-qualified in all work types required for the Project. The technical qualification requirements of Florida Administrative Code (F.A.C.) Chapter 14-75 and all qualification requirements of F.A.C. Chapter 14-22, based on the applicable category of the Project, must be satisfied.

B. Joint Venture Firm

Two or more Firms submitting as a Joint Venture must meet the Joint Venture requirements of Section 14-22.007, Florida Administrative Code. Parties to a Joint Venture must submit a Declaration of Joint Venture and Power of Attorney Form No. 375-020-18, prior to the deadline for receipt of Letters of Interest.

If the Proposer is a Joint Venture, the individual empowered by a properly executed Declaration of Joint Venture and Power of Attorney Form shall execute the proposal. The proposal shall clearly identify who will be responsible for the engineering, quality control, and geotechnical and construction portions of the Work.

C. Price Proposal Guarantee

A Price Proposal guaranty in an amount of not less than five percent (5%) of the total bid amount shall accompany each Proposer's Price Proposal. The Price Proposal guaranty may, at the discretion of the Proposer, be in the form of a cashier's check, bank money order, bank draft of any national or state bank, certified check, or surety bond, payable to the Department. The surety on any bid bond shall be a company recognized to execute bid bonds for contracts of the State of Florida. The Price Proposal guaranty shall stand for the Proposer's obligation to timely and properly execute the contract and supply all other submittals due therewith. The amount of the Price Proposal guaranty shall be a liquidated sum, which shall be due in full in the event of default, regardless of the actual damages suffered. The Price Proposal guaranty of all Proposers' shall be released pursuant to 3-4 of the Division I Design-Build

Specifications.

D. Pre-Proposal Meeting

Attendance at the pre-proposal meeting is mandatory. Any affirmatively declared proposer failing to attend will be deemed non-responsive and automatically disqualified from further consideration. The purpose of this meeting is to provide a forum for the Department to discuss with all concerned parties the proposed Project, the design and construction criteria, Critical Path Method (CPM) schedule, and method of compensation, instructions for submitting proposals, design exceptions/variations, and other relevant issues. In the event that any discussions at the pre-proposal meeting require, in the Department's opinion, official additions, deletions, or clarifications of the Request for Proposal, the Design and Construction Criteria, or any other document, the Department will issue a written addendum to this Request for Proposals as the Department determines is appropriate. No oral representations or discussions, which take place at the pre-proposal meeting, will be binding on the Department. FHWA will be invited on oversight Projects, in order to discuss the Project in detail and to clarify any concerns. Proposers shall direct all questions to the Departments Question and Answer website: http://www2.dot.state.fl.us/construction/bidquestionmain.asp.

E. Technical Proposal Page-turn Meeting

The Department will meet with each Proposer, formally for thirty (30) minutes, for a page-turn meeting. FHWA will be invited on FA Oversight Projects. The purpose of the page-turn meeting is for the Design-Build Firm to guide the Technical Review Committee through the Technical Proposal, highlighting sections within the Technical Proposal that the Design-Build Firm wishes to emphasize. The page-turn meeting will occur between the date the Technical Proposal is due and the Question and Answer (Q&A) session occurs, per the Schedule of Events section of this RFP. The Department will terminate the page-turn meeting promptly at the end of the allotted time. The Department will audiotape record or videotape all or part of the page-turn meeting. All audiotape recordings or videotape recordings will become part of the Contract Documents. The page-turn meeting will not constitute discussions or negotiations. The Design-Build Firm will not be permitted to ask questions of the Technical Review Committee during the page-turn meeting. An unmodified aerial or map of the project limits provided by the Design-Build Firm is acceptable for reference during the page-turn meeting. The unmodified aerial or map may not be left with the Department upon conclusion of the page turn meeting. Use of other visual aids, electronic presentations, handouts, etc., during the page turn meeting is expressly prohibited. Upon conclusion of the thirty (30) minutes, the Technical Review Committee is allowed five (5) minutes to ask questions pertaining to information highlighted by Design-Build Firm. Participation in the page-turn meeting by the Design-Build Firm shall be limited to five (5) representatives from the Design-Build Firm. Design-Build Firms desiring to opt out of the page-turn meeting may do so by submitting a request to the Department.

F. Question and Answer Session

The Department may meet with each Proposer, formally, for a Question and Answer session**.** FHWA shall be invited on FA Oversight Projects. The purpose of the Q&A session is for the Technical Review Committee to seek clarification and ask questions, as it relates to the Technical Proposal, of the Proposer. The Department may terminate the Q&A session promptly at the end of the allotted time. The Department may audiotape record or videotape all or part of the Q&A session. All audiotape recordings or videotape recordings will become part of the Contract Documents. The Q&A session will not constitute "discussions" or negotiations. Proposers will not be permitted to ask questions of the Department except to

ask the meaning of a clarification question posed by the Department. No supplemental materials, handouts, etc. will be allowed to be presented in the Q&A session. No additional time will be allowed to research answers.

Within one (1) week of the Q&A session, the Design-Build Firm shall submit to the Department a written clarification letter summarizing the answers provided during the Q&A session. The Design-Build Firm shall not include information in the clarification letter which was not discussed during the Q&A session. In the event the Design-Build Firm includes additional information in the clarification letter which was not discussed during the Q&A session and is not otherwise included in the Technical Proposal, such additional information will not be considered by the Department during the evaluation of the Technical Proposal.

The Department will provide some (not necessarily all) proposed questions to each Design-Build Firm as it relates to their technical proposal approximately 24 hours before the scheduled Q&A session.

G. Protest Rights

Any person who is adversely affected by the specifications contained in this Request for Proposal must file a notice of intent to protest in writing within seventy-two hours of the receipt of this Request for Proposals. The formal written protest shall be filed within ten days after the date of the notice of protest if filed. The person filing the Protest must send the notice of intent and the formal written protest to:

Clerk of Agency Proceedings
Department of Transportation
605 Suwannee Street, MS 58, Room 562
Tallahassee, Florida 32399-0458

The formal written protest must state with particularity the facts and law upon which the protest is based and be legible, on 8 ½ x 11-inch white paper and contain the following:

1. Name, address, telephone number, and Department identifying number on the Notice, if known, and name, address and telephone number of a representative, if any; and

2. An explanation of how substantial interest will be affected by the action described in the Request for Proposals; and

3. A statement of when and how the request for Proposals was received; and

4. A statement of all disputed issues of material fact. If there are none, this must be indicated; and

5. A concise statement of the ultimate facts alleged, as well as the rules and statutes, which entitle to relief; and

6. A demand for relief; and

7. Conform to all other requirements set out in Florida Statutes (F.S.), Chapter 120 and F.A.C., Chapter 28-106, including but not limited to Section 120.57 F.S. and Rules 28-106.301, F.A.C., as may be applicable.

A formal hearing will be held if there are disputed issues of material fact. If a formal hearing is held, this

matter will be referred to the Division of Administrative Hearings, where witnesses and evidence may be presented and other witnesses may be cross-examined before an administrative law judge. If there are no disputed issues of material fact, an informal hearing will be held, in which case the person filing the protest will have the right to provide the Department with any written documentation or legal arguments which they wish the Department to consider.

Mediation pursuant to Section 120.573, F.S., may be available if agreed to by all parties, and on such terms as may be agreed upon by all parties. The right to administrative hearing is not affected when mediation does not result in a settlement.

Failure to file a protest within the time prescribed in Section 120.57(3), F.S., shall constitute a waiver of proceedings under Chapter 120, F.S.

H. Non-Responsive Proposals

Proposals found to be non-responsive shall not be considered. Proposals may be rejected if found to be in nonconformance with the requirements and instructions herein contained. A proposal may be found to be non-responsive by reasons, including, but not limited to, failure to utilize or complete prescribed forms, conditional proposals, incomplete proposals, indefinite or ambiguous proposals, failure to meet deadlines and improper and/or undated signatures.

Other conditions which may cause rejection of proposals include evidence of collusion among Proposers, obvious lack of experience or expertise to perform the required work, submission of more than one proposal for the same work from an individual, firm, joint venture, or corporation under the same or a different name (also included for Design-Build Projects are those proposals wherein the same Engineer is identified in more than one proposal), failure to perform or meet financial obligations on previous contracts, employment of unauthorized aliens in violation of Section 274A (e) of the Immigration and Nationalization Act, or in the event an individual, firm, partnership, or corporation is on the United States Comptroller General's List of Ineligible Design-Build Firms for Federally Financed or Assisted Projects.

Proposals will also be rejected if not delivered or received on or before the date and time specified as the due date for submission.

I. Waiver of Irregularities

The Department may waive minor informalities or irregularities in proposals received where such is merely a matter of form and not substance, and the correction or waiver of which is not prejudicial to other Proposers. Minor irregularities are defined as those that will not have an adverse effect on the Department's interest and will not affect the price of the Proposals by giving a Proposer an advantage or benefit not enjoyed by other Proposers.

1. Any design submittals that are part of a proposal shall be deemed preliminary only.

2. Preliminary design submittals may vary from the requirements of the Design and Construction Criteria. The Department, at their discretion, may elect to consider those variations in awarding points to the proposal rather than rejecting the entire proposal.

3. In no event will any such elections by the Department be deemed to be a waiving of the Design and Construction Criteria.

4. The Proposer who is selected for the Project will be required to fully comply with the Design and Construction Criteria for the price bid, regardless that the proposal may have been based on a variation from the Design and Construction Criteria.

5. Proposers shall identify separately all innovative aspects as such in the Technical Proposal. An innovative aspect does not include revisions to specifications or established Department policies. Innovation should be limited to Design-Build Firm's means and methods, roadway alignments, approach to Project, use of new products, new uses for established products, etc.

6. The Proposer shall obtain any necessary permits or permit modifications not already provided.

7. Those changes to the Design Concept may be considered together with innovative construction techniques, as well as other areas, as the basis for grading the Technical Proposals in the area of innovative measures.

J. Modification or Withdrawal of Technical Proposal

Proposers may modify or withdraw previously submitted Technical Proposals at any time prior to the Technical Proposal due date. Requests for modification or withdrawal of a submitted Technical Proposal shall be in writing and shall be signed in the same manner as the Technical Proposal. Upon receipt and acceptance of such a request, the entire Technical Proposal will be returned to the Proposer and not considered unless resubmitted by the due date and time. Proposers may also send a change in sealed envelope to be opened at the same time as the Technical Proposal provided the change is submitted prior to the Technical Proposal due date.

K. Department's Responsibilities

This Request for Proposal does not commit the Department to make studies or designs for the preparation of any proposal, nor to procure or contract for any articles or services.

The Department does not guarantee the details pertaining to borings, as shown on any documents supplied by the Department, to be more than a general indication of the materials likely to be found adjacent to holes bored at the site of the work, approximately at the locations indicated.

L. Design-Build Contract

The Department will enter into a Lump Sum contract with the successful Design-Build Firm. In accordance with Section V, the Design-Build Firm will provide a schedule of values to the Department for their approval. The total of the Schedule of Values will be the lump sum contract amount.

The terms and conditions of this contract are fixed price and fixed time. The Design-Build Firm's submitted bid (time and cost) is to be a lump sum bid for completing the scope of work detailed in the Request for Proposal.

IV. Disadvantaged Business Enterprise (DBE) Program.

A. DBE Availability Goal Percentage:

The Department of Transportation has an overall eight and six tenths percent (8.6%) race-neutral DBE goal. This means that the State's goal is to spend at least 8.6% of the highway dollars with Certified DBE's as prime Design-Build Firms or as subcontractors. Race-neutral means that the Department believes that the 8.6% overall goal can be achieved through the normal competitive procurement process. The Department has reviewed this Project and assigned a DBE availability goal shown on the bid blank/contract front page under "% DBE Availability Goal". Although not a contract requirement, the Department believes that this DBE percentage can realistically be achieved on this Project based on the number of DBE's associated with the different types of work that will be required.

Under 49 Code of Federal Regulations Part 26, if the 8.6% goal is not achieved, the Department may be required to return to a race-conscious program where goals are imposed on individual contracts. The Department encourages all of our Design-Build Firms to actively pursue obtaining bids and quotes from Certified DBE's.

The Department is reporting to the Federal Highway Administration the planned commitments to use DBE's. This information is being collected through the Anticipated DBE Participation Statement.

B. DBE Supportive Services Providers:

The Department has contracted with a consultant, referred to as DBE Supportive Services Provider, to provide managerial and technical assistance to DBE's. This consultant is also required to work with prime Design-Build Firms, who have been awarded contracts, to assist in identifying DBE's that are available to participate on the Project. The successful Design-Build Firm should meet with the DBE Supportive Services Provider to discuss the DBE's that are available to work on this Project. The current Provider for the State of Florida is serviced by Blackmon Roberts Group and can be reached at (863) 802-1280 in Lakeland or (305) 777-0231 in Coral Gables.

C. Bidders Opportunity List:

The Federal DBE Program requires States to maintain a database of all Firms that are participating, or attempting to participate, on DOT-assisted contracts. The list must include all Firms that bid on prime contracts or bid or quote subcontracts on DOT-assisted Projects, including both DBE's and Non-DBE's.

A Bid Opportunity List should be submitted through the Equal Opportunity Compliance system which is available at the Equal Opportunity Office Website. This information should be returned to the Equal Opportunity Office within three days of submission.

V. Project Requirements and Provisions for Work.

A. Governing Regulations:

The services performed by the Design-Build Firm shall be in compliance with all applicable Manuals and Guidelines including the Department, FHWA, AASHTO, and additional requirements specified in this document. Except to the extent inconsistent with the specific provisions in this document, the current edition, including updates, of the following Manuals and Guidelines shall be used in the performance of this work. Current edition is defined as the edition in place and adopted by the Department at the date of advertisement of this contract with the exception of the Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications, Manual on Uniform Traffic Control Devices (MUTCD), Design Standards and Revised Index Drawings. The

Design-Build Firm shall use the edition of the Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications, Design Standards and Revised Index Drawings in effect at the time the bid price proposals are due in the District Office. The Design-Build Firm shall use the 2009 edition of the MUTCD (as amended in 2012). It shall be the Design-Build Firm's responsibility to acquire and utilize the necessary manuals and guidelines that apply to the work required to complete this Project. The services will include preparation of all documents necessary to complete the Project as described in Section I of this document.

1. Florida Department of Transportation Roadway Plans Preparation Manuals (PPM)
   http://www.dot.state.fl.us/rddesign/PPMManual/PPM.shtm

2. Florida Department of Transportation Design Standards
   http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.shtm

3. Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications
   http://www.dot.state.fl.us/specificationsoffice/Default.shtm

4. Florida Department of Transportation Surveying Procedure
   http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/550030101.pdf

5. Florida Department of Transportation EFB User Handbook (Electronic Field Book)
   http://www.dot.state.fl.us/surveyingandmapping/regulations.shtm

6. Florida Department of Transportation Drainage Manual
   http://www.dot.state.fl.us/rddesign/dr/Manualsandhandbooks.shtm

7. Florida Department of Transportation Soils and Foundations Handbook
   http://www.dot.state.fl.us/structures/Manuals/SFH.pdf

8. Florida Department of Transportation Structures Manual
   http://www.dot.state.fl.us/structures/manlib.shtm

9. Florida Department of Transportation Current Structures Design Bulletins
   http://www.dot.state.fl.us/structures/Memos/currentbulletins.shtm

10. Florida Department of Transportation Computer Aided Design and Drafting (CADD) Production Criteria Handbook
    http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/

11. Florida Department of Transportation Production Criteria Handbook CADD Structures Standards
    http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/

12. Instructions for Design Standards
    http://www.dot.state.fl.us/structures/IDS/IDSportal.pdf

13. AASHTO – A Policy on Geometric Design of Highways and Streets
    https://bookstore.transportation.org/item_details.aspx?ID=110

14. MUTCD - 2009
    http://mutcd.fhwa.dot.gov/

15. Safe Mobility For Life Program Policy Statement
    http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/000750001.pdf

16. Traffic Engineering and Operations Safe Mobility for Life Program

http://www.dot.state.fl.us/trafficoperations/Operations/SafetyisGolden.shtm

17. Florida Department of Transportation American with Disabilities Act (ADA) Compliance – Facilities Access for Persons with Disabilities Procedure
http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/625020015.pdf

18. Florida Department of Transportation Florida Sampling and Testing Methods
http://www.dot.state.fl.us/statematerialsoffice/administration/resources/library/publications/fstm/disclaimer.shtm

19. Florida Department of Transportation Flexible Pavement Coring and Evaluation Procedure
http://www.dot.state.fl.us/statematerialsoffice/administration/resources/library/publications/materialsmanual/documents/v1-section32-clean.pdf

20. Florida Department of Transportation Design Bulletins and Update Memos
http://www.dot.state.fl.us/rddesign/updates/files/updates.shtm

21. Florida Department of Transportation Utility Accommodation Manual
http://www.dot.state.fl.us/rddesign/utilities/UAM.shtm

22. AASHTO LRFD Bridge Design Specifications
https://bookstore.transportation.org/category_item.aspx?id=BR

23. Florida Department of Transportation Flexible Pavement Design Manual
http://www.dot.state.fl.us/pavementmanagement/PUBLICATIONS.shtm

24. Florida Department of Transportation Rigid Pavement Design Manual
http://www.dot.state.fl.us/pavementmanagement/PUBLICATIONS.shtm

25. Florida Department of Transportation Pavement Type Selection Manual
http://www.dot.state.fl.us/pavementmanagement/PUBLICATIONS.shtm

26. Florida Department of Transportation Right of Way Manual
http://www.dot.state.fl.us/rightofway/Documents.shtm

27. Florida Department of Transportation Traffic Engineering Manual
http://www.dot.state.fl.us/TrafficOperations//Operations/Studies/TEM/TEM.shtm

28. Florida Department of Transportation Intelligent Transportation System Guide Book
http://www.dot.state.fl.us/TrafficOperations/Doc_Library/Doc_Library.shtm

29. Federal Highway Administration Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications
http://www.fhwa.dot.gov/engineering/geotech/pubs/reviewguide/checklist.cfm

30. AASHTO Guide for the Development of Bicycle Facilities
https://bookstore.transportation.org/collection_detail.aspx?ID=116

31. Federal Highway Administration Hydraulic Engineering Circular Number 18 (HEC 18).
http://www.fhwa.dot.gov/engineering/hydraulics/library_arc.cfm?pub_number=17

32. Florida Department of Transportation Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways
http://www.dot.state.fl.us/rddesign/FloridaGreenbook/FGB.shtm

33. Florida Department of Transportation Project Development and Environment Manual, Parts 1 and 2
http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm

34. Florida Department of Transportation Driveway Information Guide
http://www.dot.state.fl.us/planning/systems/sm/accman/pdfs/driveway2008.pdf

35. AASHTO Highway Safety Manual
http://www.highwaysafetymanual.org/Pages/default.aspx

36. 29 CFR, Part 1910.1001 – Asbestos Standard for Industry, U.S. Occupational Safety and Health Administration (OSHA)
http://www.ecfr.gov

37. 29 CFR, Part 1926, 1101 – Asbestos Standard for Construction, OSHA
http://www.ecfr.gov

38. 40 CFR, Part 61, Subpart M – National Emission Standard for Asbestos, Environmental Protection Agency (EPA)
http://www.ecfr.gov

39. 40 CFR, Part 763, Asbestos, EPA
http://www.ecfr.gov

40. Ch. 469, F.S. – Asbestos Abatement, Florida Department of Business and Professional Regulation (DBPR)
http://www.leg.state.fl.us/Statutes

41. Ch. 62-257, F.A.C. – Asbestos Program, Florida Department of Environmental Protection (DEP)
http://www.dep.state.fl.us/legal/Rules/mainrulelist.htm

42. Model Guide Specifications – Asbestos Abatement and Management in Buildings, National Institute for Building Sciences (NIBS)
http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100EM7S.txt

43. Topic 425-000-005 Asbestos Management Program
http://www2.dot.state.fl.us/proceduraldocuments/procedures/proceduresbynumber.asp

44. Topic 625-020-020 Asbestos on Bridges
http://www2.dot.state.fl.us/proceduraldocuments/procedures/proceduresbynumber.asp

45. Florida Statutes
http://www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&Submenu=1&Tab=statutes&CFID=14677574&CFTOKEN=80981948

B. Innovative Aspects:

All innovative aspects shall be identified separately as such in the Technical Proposal.

An innovative aspect does not include revisions to specifications, standards or established Department policies. Innovation should be limited to Design-Build Firm's means and methods, roadway alignments, approach to Project, etc.

1. Alternative Technical Concept (ATC) Proposals

The ATC process allows innovation, flexibility, time and cost savings on the design and construction of Design-Build Projects while providing the best value for the public. The alternative technical concept shall provide an approach that is equal to or better than what is required by the Request for Proposal (RFP), as determined by the Department. Concepts which reduce scope, quality, performance, or reliability should not be proposed. A proposed concept is not an ATC if it is contemplated by the RFP.

One-on-One ATC discussion meetings may be held in order for the Design-Build Firm to describe proposed changes to supplied basic configurations, Project scope, design criteria, and/or construction criteria. Each Design-Build Firm with proposed changes may request a One-on-One ATC discussion meeting to describe the proposed changes. The Design-Build Firm shall provide, by the deadline shown in the Schedule of Events of this RFP, a preliminary list of ATC proposals, to be reviewed and discussed during the One-on-One ATC discussion meeting. This list may not be inclusive of all ATC's to be discussed but it should be sufficiently comprehensive to allow the Department to identify appropriate personnel to participate in the One-on-One ATC discussion meeting. The purpose of the One-on-One ATC discussion meeting is to discuss the ATC proposals, answer questions that the Department may have related to the ATC proposal, review other relevant information and when possible establish whether the proposal meets the definition of an ATC thereby requiring the submittal of a formal ATC submittal. The meeting should be between representatives of the Design-Build Firm and/or the Design-Build Engineer of Record and District/Central Office staff as needed to provide feedback on the ATC proposal.

2. Submittal of ATC Proposals

All ATC submittals must be in writing and may be submitted at any time following the Shortlist Posting but shall be submitted prior to the deadline shown in the Schedule of Events of this RFP.

All ATC submittals shall be sequentially numbered and include the following information and discussions:

a) Description: A description and conceptual drawings of the configuration of the ATC or other appropriate descriptive information, including, if appropriate, product details and a traffic operational analysis;

b) Usage: The locations where and an explanation of how the ATC would be used on the Project;

c) Deviations: References to requirements of the RFP which are inconsistent with the proposed ATC, an explanation of the nature of the deviations from the requirements and a request for approval of such deviations along with suggested changes to the requirements of the RFP which would allow the alternative proposal;

d) Analysis: An analysis justifying use of the ATC and why the deviation, if any, from the requirements of the RFP should be allowed;

e) Impacts: A preliminary analysis of potential impacts on vehicular traffic (both during and after construction), environmental impacts, community impacts, safety, and life-cycle Project and infrastructure costs, including impacts on the cost of repair, maintenance, and operation;

f) Risks: A description of added risks to the Department or third parties associated with implementation of the ATC;

g) Quality: A description of how the ATC is equal or better in quality and performance than the requirements of the RFP;

h) Operations: Any changes in operation requirements associated with the ATC, including ease of operations;

i) Maintenance: Any changes in maintenance requirements associated with the ATC, including ease of maintenance;

j) Anticipated Life: Any changes in the anticipated life of the item comprising the ATC;

3. Review of ATC Submittals

After receipt of the ATC submittal, the District Design Engineer (DDE), or designee, will communicate with the appropriate staff (i.e. District Structures Engineer, District Construction Engineer, District Maintenance Engineer, State Structures Engineer, State Roadway Design Engineer, FHWA, as applicable) as necessary, and respond to the Design-Build Firm in writing as to whether the ATC is acceptable, not acceptable, or requires additional information within 14 calendar days of receipt of the ATC submittal. If the DDE, or designee, determines that more information is required for the review of an ATC, questions should be prepared by the DDE, or designee, to request and receive responses from the Design-Build Firm. The review should be completed within 14 calendar days of the receipt of the ATC submittal. If the review will require additional time, the Design-Build Firm should be notified in advance with an estimated timeframe for completion.

If the ATC will result in changes to design standards or criteria, the changes will need to be approved in accordance with the Department's procedures prior to responding to the Design-Build Firm.

Prior to approving ATC's which would result in the issuance of an Addendum as a result of a Design Exception and/or Design Variation, the Design-Build Firm will be given the option to withdraw previously submitted ATC proposals.

The Project file will clearly document all communications with any Design-Build Firm.

ATC's are accepted by the Department at its discretion and the Department reserves the right to reject any ATC submitted.

Approved Design Exceptions or Design Variations required as part of an approved ATC will result in the issuance of an addendum to the RFP notifying all Shortlisted Design-Build Firms of the approved Design Exception(s) or Design Variation(s). Such a change will be approved by FHWA, as applicable.

The Department reserves the right to disclose to all Design-Build Firms any issues raised during the ATC meetings, except to the extent that the Department determines, in its sole discretion, such disclosure would reveal confidential or proprietary information of the ATC.

4. Incorporation into Proposal

The Design-Build Firm will have the option to include any ATC's to which it received acceptance in their proposal and the Proposal Price should reflect any incorporated ATC's.

By submitting a Proposal, the Design-Build Firm agrees, if it is not selected, to disclosure of its work product to the successful Design-Build Firm, only after receipt of the designated stipend (if applicable) or after award of the contract whichever occurs first.

C. Geotechnical Services:

1. **General Conditions**:

The Design-Build Firm shall be responsible for identifying and performing any geotechnical investigation, analysis and design of foundations, foundation construction, foundation load and integrity testing, and inspection dictated by the Project needs in accordance with Department guidelines, procedures and specifications. All geotechnical work necessary shall be performed in accordance with the Governing Regulations. The Design-Build Firm shall be solely responsible for all geotechnical aspects of the Project.

D. Department Commitments: N/A

E. Environmental Permits:

1. **Storm Water and Surface Water:**

Plans shall be prepared in accordance with Chapters 373 and 403 (F.S.) and Chapters 40 and 62 (F.A.C.).

2. **Permits:**

The Design-Build Firm shall be responsible for modifying the issued permits as necessary to accurately depict the final design. The Design-Build Firm shall be responsible for any necessary permit time extensions or re-permitting in order to keep the environmental permits valid throughout the construction period. The Design-Build Firm shall provide the Department with draft copies of any and all permit applications, including responses to agency Requests for Additional Information, requests to modify the permits and/or requests for permit time extensions, for review and approval by the Department prior to submittal to the agencies.

All applicable data shall be prepared in accordance with Chapter 373 and 403, Florida Statutes, Chapters 40 and 62, Florida Administrative Code; Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, 23 CFR 771, 23 CFR 636, and parts 114 and 115, Title 33, Code of Federal Regulations. In addition to these Federal and State permitting requirements, any dredge and fill permitting required by local agencies shall be prepared in accordance with their specific regulations. Preparation of all documentation related to the acquisition of all applicable permits will be the responsibility of the Design-Build Firm. Preparation of complete permit packages will be the responsibility of the Design-Build Firm. The Design-Build Firm is responsible for the accuracy of all information included in permit application packages. As the permitee, the Department is responsible for reviewing, approving, and signing, the permit application package including all permit modifications, or subsequent permit applications. This applies whether the project is Federal or state funded. Once the Department has approved the permit application, the Design-Build Firm is responsible for submitting the permit application to the environmental permitting agency. A copy of any and all correspondence with any of the environmental permitting agencies shall be sent to the District Environmental Permits Office. If any agency rejects or denies the permit application, it is the Design-Build Firm's responsibility to make whatever changes necessary to ensure the permit application is approved. The Design-Build Firm shall be responsible for any necessary permit extensions or re-permitting in order to keep the environmental permits valid throughout the construction period. The

Design-Build Firm shall provide the Department with draft copies of any and all permit applications, including responses to agency Requests for Additional Information, requests to modify the permits and/or requests for permit extensions, for review and approval by the Department prior to submittal to the agencies.

The Design-Build Firm will be required to pay all permit fees. Any fines levied by permitting agencies shall be the responsibility of the Design-Build Firm. A copy of any and all correspondence with any of the environmental permitting agencies shall be sent to the District Environmental Permits Office. The Design-Build Firm shall be responsible for complying with all permit conditions.

Wetland mitigation is required in the issued permits, which are based on the Conceptual Design Plans, and will be the responsibility of the Department. If any permit applications completed by the Design-Build Firm propose to increase the amount of wetland impact that requires mitigation, the Design-Build Firm shall be responsible for providing to the Department an update on the amount and type of wetland impacts as soon as the impacts are anticipated (including temporary impacts and/or any anticipated impacts due to construction staging or construction methods). The Department will direct the use of a mitigation site, private mitigation bank or the use of the water management district per 373.4137 F.S. The mitigation costs of any additional impacts proposed by the Design-Build Firm shall be the responsibility of the Design-Build Firm. If the Department directs use of a private mitigation bank, the Design-Build Firm shall pay the appropriate fee directly to the bank. If the Department directs use of 373.4137, F.S., the Design-Build Firm shall provide appropriate funds to the Department at the time of permit issuance and the Department will then transfer the mitigation funds to the SWFWMD.

The Design-Build Firm shall be solely responsible for all costs associated with these permitting activities and shall include all necessary permitting activities in their schedule.

However, notwithstanding anything above to the contrary, upon the Design-Build Firm's preliminary request for extension of Contract Time, pursuant to 8-7.3, being made directly to the District Construction Engineer, the Department reserves unto the District Construction Engineer, in their sole and absolute discretion, according to the parameters set forth below, the authority to make a determination to grant a non-compensable time extension for any impacts beyond the reasonable control of the Design-Build Firm in securing permits. Furthermore, as to any such impact, no modification provision will be considered by the District Construction Engineer unless the Design-Build Firm clearly establishes that it has continuously from the beginning of the Project aggressively, efficiently and effectively pursued the securing of the permits including the utilization of any and all reasonably available means and methods to overcome all impacts. There shall be no right of any kind on behalf of the Design-Build Firm to challenge or otherwise seek review or appeal in any forum of any determination made by the District Construction Engineer under this provision.

F. Railroad Coordination: N/A

G. Survey:

The Design-Build Firm shall perform all surveying and mapping services necessary to complete the Project. Survey services must also comply with all pertinent Florida Statutes and applicable rules in the Florida Administrative Code. All field survey data will be furnished to the District Surveyor in a Department approved digital format, readily available for input and use in CADD Design files. All surveying and mapping work must be accomplished in accordance with the Department's Surveying Procedure, Topic Nos. 550-030-101; Right-of-Way Mapping Procedure, Topic No. 550-030-015; Aerial Surveying Standards for Transportation Projects Procedure, Topic No. 550-020-002. This work must

comply with the Minimum Technical Standards for Professional Surveyors and Mappers, Chapter 5J-17, Florida Administrative Code (F.A.C.), pursuant to Section 472.027, Florida Statutes (F.S.) and any special instructions from the Department. This survey also must comply with the Department of Environmental Protection Rule, Chapter 18-5, F.A.C. pursuant to Chapter 177, F.S., and the Department of Environmental Protection.

H. Verification of Existing Conditions:

The Design-Build Firm shall be responsible for verification of existing conditions, including research of all existing Department records and other information.

By execution of the contract, the Design-Build Firm specifically acknowledges and agrees that the Design-Build Firm is contracting and being compensated for performing adequate investigations of existing site conditions sufficient to support the design developed by the Design-Build Firm and that any information is being provided merely to assist the Design-Build Firm in completing adequate site investigations. Notwithstanding any other provision in the contract documents to the contrary, no additional compensation will be paid in the event of any inaccuracies in the preliminary information.

I. Submittals:

1. Plans:

Plans must meet the minimum contents of a particular phase submittal prior to submission for review. The particular phase of each submittal shall be clearly indicated on the cover sheet. Component submittals must be accompanied by sufficient information for adjoining components or areas of work to allow for proper evaluation of the component under review.

The Design-Build Firm shall submit the Project Systems Engineering Management Plan (P-SEMP) and Project ITS Architecture (P-ITSA) to the Department within 60 calendar days after Notice to Proceed. In addition, the Design-Build Firm shall be required to prepare ITS design document submittals (RTVM, Data Submittal Forms, etc.) throughout the duration of the Project to support the final design (See MTR Section 4.2 and RFP Section V, subsection K for further detail).

The Design-Build Firm shall provide copies of required review documents as listed below.

90% Component Plans
10 sets of 11” X 17” ITS plans
3 copies of Final Geotechnical Report
3 sets of documentation - structures
10 copies of Technical Special Provisions on CD
Independent Peer reviewer’s comments and comment responses

Final Component Plans
10 sets of 11” X 17” ITS plans
10 sets of final documentation
1 signed and sealed copy of Specifications Package
2 sets of electronic copies of Technical Special Provisions on CD
Independent Peer Reviewer’s signed and sealed cover letter that all comments have been addressed and resolved.

Construction Set:
1 set of 11"X 17" copies of the signed and sealed plans for the Department to stamp "Released for construction**"**

Final signed and sealed plans will be delivered to the Department's Project Manager prior to construction of any component. The Department's Project Manager will send a copy of final signed and sealed plans to the appropriate office for review and comment. Once all comments have been satisfactorily resolved as determined by the Department, the Department's Project Manger will initial, date and stamp each submittal as "Released for Construction". Only signed and sealed plans which are stamped "Released for Construction" by the Department's Project Manager are valid and all work that the Design-Build Firm performs in advance of the Department's release of Plans will be at the Design-Build Firm's risk.

Record Set:

The Design-Build Firm shall furnish to the Department, upon Project completion, the following:

- 1 set of 11" X 17" signed and sealed plans
- 2 sets of 11 "X 17" copies of the signed and sealed plans
- 3 sets of final documentation (if different from final component submittal)
- 2 (two) Final Project CD's
- Survey Information

The Design-Build Firm's Professional Engineer in responsible charge of the Project's design shall professionally endorse (signed and sealed and certified) the record prints, the special provisions and all reference and support documents. The professional endorsement shall be performed in accordance with the Department Plans Preparation Manual.

The Design-Build Firm shall complete the record set as the Project is being constructed. The record set becomes the as-builts at the end of the Project. All changes shall be signed/sealed by the EOR. The record set shall reflect all changes initiated by the Design-Build Firm or the Department in the form of revisions. The record set shall be submitted on a Final Project CD upon Project completion.

The CEI shall do a review of the record set prior to final acceptance in order to complete the record set.

The CEI shall certify the final plans as per Section 4.5.7 of Chapter 4 of the Preparation and Documentation Manual (TOPIC No. 700-050-010).

With respect to the ITS plan, the record set shall show Global Positioning System (GPS) coordinate locations of all (existing, retained or installed) ITS field elements and equipment, including cabinets, equipment boxes, pull-boxes (electrical and fiber), splice vaults, access points, electrical cable routing, fiber optic cable routing, complete measurement of the fiber optic cable length including all slack cable, CCTV camera poles, dynamic message signs, vehicle detector poles, etc. A separate table listing the GPS coordinates for all ITS field elements (existing, retained or installed) by the Design-Build Firm shall also be provided as a part of the record set, in a format to be specified by the Department. The record set to be submitted by the Design-Build Firm shall include fiber optic cable test results for both pre and post installations and fiber optic cable splice diagrams identifying the individual fiber splices on the various fiber optic cables. The fiber optics splice diagram shall be developed and presented in a format to be specified by the Department.

2. Milestones:

Component submittals, in addition to the plan submittals listed in the previous section will be required. In addition to various submittals mentioned throughout this document the following ITS related milestone submittals will be required.

- ITS Systems Engineering Master Schedule (SEMS)
- Project ITS Architecture (P-ITSA)
- Project Systems Engineering Management Plan (P-SEMP)
- 90% Design Submittal
- 90% Plan Review
- Final Design Submittal
- Final Plan Review
- Requirements Traceability Verification Matrix (RTVM)
- Project Specifications
- Shop Drawings
- Shop Drawing Review
- Design Approval for Construction
- Material Acquisition
- Final Plans
- ITS Test Plans and Test Results
- As-Built Plans/Record Drawings

3. Railroad Coordination: N/A

J. Contract Duration:

The Department has established a Contract Duration of 365 calendar days for the subject Project.

K. Project Schedule:

The Design-Build Firm shall submit a Schedule, in accordance with Subarticle 8-3.2 (Design-Build Division I Specifications). The Design-Build Firm shall incorporate the ITS Systems Engineering Master Schedule into the Project baseline. The Design-Build Firm's Schedule shall allow for a fifteen (15) calendar days (excluding weekends and Department observed Holidays) review time for the Department's review of all submittals with the exception of Category II structures submittals. The review of Category II structures submittals requires Central Office involvement and the Schedule shall allow twenty (20) calendar days (excluding weekends and Department observed Holidays) for these reviews.

The following Special Events have been identified in accordance with Specification 8-6.4:

No Special Events have been identified.

The minimum number of activities included in the Schedule shall be those listed in the Schedule of Values and those listed below:

- Anticipated Award Date
- Design SubmittalsShop Drawing Submittals

- Design Survey
- Submittal Reviews by the Department and FHWA
- Design Review / Acceptance Milestones
- Materials Quality Tracking
- Geotechnical Investigation
- Start of Construction
- Clearing and Grubbing
- Construction Mobilization
- Foundation Design
- Foundation Construction
- Subsurface Utility Engineering
- Utility Coordination
- Materials both on and off the APL (603-7) (Submit 30 days after NTP & update at 90, Final Plans and through construction as model/serial numbers are obtained.)
- P-ITSA (Submit 60 days after NTP, final design and end of integration)
- P-SEMP (Submit 60 days after NTP, final design and end of integration)
- 90% and Final ITS Plans
- 90% and Final Fiber Optic Network Configuration Plan Submitted for Review
- Project Specifications
- RTVM (Submit 90 days after NTP, final design and end of integration)
- ITS Test Plans
- Overhead truss span and overhead truss cantilever and ITS pole Foundation Design
- Overhead truss span and overhead truss cantilever and ITS pole Foundation Construction
- Intelligent Transportation System Design
- Intelligent Transportation System Construction
- ITS Field Element Roadway Placement
- ITS Field Element Integration and testing
- ITS Network Integration and testing
- ITS Final Acceptance Testing
- Maintenance of Traffic Design
- Maintenance of Traffic Set-Up (per duration)
- Erosion Control
- Holidays and Special Events (shown as non-work days)
- Additional Construction Milestones as determined by the Design-Build Firm
- Final Completion Date for All Work

L. Key Personnel/Staffing:

The Design-Build Firm's work shall be performed and directed by key personnel identified in the expanded letter of interest and/or technical proposal by the Design-Build Firm. Any changes in the indicated personnel shall be subject to review and approval by the Department's Project Manager. The Design-Build Firm shall have available a professional staff that meets the minimum training and experience set forth in Florida Statute Chapter 455.

M. Meetings and Progress Reporting:

The Design-Build Firm shall anticipate periodic meetings with Department personnel and other agencies

as required for resolution of design and/or construction issues. These meetings may include:

- Department technical issue resolution
- Permit agency coordination
- Local government agency coordination
- Scoping Meetings
- System Integration Meetings

During design, the Design-Build Firm shall meet with the Department's Project Manager on a monthly basis and provide a one month look ahead of the activities to be completed during the upcoming month.

During construction, the Design-Build Firm shall meet with the Department's Project Manager on a weekly basis and provide a one-week look ahead for activities to be performed during the coming week.

The Design-Build Firm shall meet with the Department's Project Manager at least thirty (30) calendar days before beginning system integration activities. The purpose of these meetings shall be to verify the Design-Build Firm's ITS and signalization integration plans by reviewing site survey information, proposed splicing diagrams, IP addressing schemes, troubleshooting issues, and other design issues. In addition, at these meetings the Design-Build Firm shall identify any concerns regarding the Integration and provide detailed information on how such concerns will be addressed and/or minimized.

The Design-Build Firm shall provide all documentation required to support system integration meetings, including detailed functional narrative text, system and subsystem drawings and schematics. Also included shall be the documentation to demonstrate all elements of the proposed design which includes, but is not limited to: technical, functional, and operational requirements; ITS/communications; equipment; termination/patch panels; performance criteria; and details relating to interfaces to other ITS subsystems.

System Integration Meetings will be held n mutually agreeable dates.

All action items resulting from the System Integration Meeting shall be satisfactorily addressed by the Design-Build Firm and reviewed and approved by the Department.

The Design-Build Firm shall, on a monthly basis, provide written progress reports that describe the items of concern and the work performed on each task.

N. Public Involvement:

1. **General:**

Public involvement is an important aspect of the Project. Public involvement includes communicating to all interested persons, groups, and government organizations information regarding the development of the Project. A Public Involvement Consultant (PIC) will not be hired by the Department for this project. The Design-Build Firm shall coordinate all Public Involvement activities with the Department.

2. **Community Awareness:**

The Design-Build Firm shall prepare for Department review and approval, a Community Awareness Program for the project, which shall be implemented during project construction and shall include the following as a minimum:

- Fact Sheet (for internal Department use only): The Design-Build Firm shall create a fact sheet, for posting on the District Seven Infonet.
- Project Brochure (for public distribution): The Design-Build Firm shall create an informational brochure for this project to post on the mytbi website.
- Elected Officials Design Phase Submittal Notification: The Design-Build Firm shall prepare an email notification to be sent by the District Secretary to local elected officials at each design plans phase submittal.
- Construction Kick-off News Release: If requested by the Department, the Design-Build Firm shall write a press release for use with local media in the project area announcing the start of the construction project and providing general project information and contact information during construction.
- Maintenance of Access Plan (business & residential): Access to the State Highway System shall be maintained. Local events shall be considered when implementing the traffic control plan. A list of driveways and the hours of operation for the businesses affected by this project shall be provided. Blue business-specific signs shall be used.
- Special Concerns List: The Design-Build Firm shall develop a special concerns list.

3. **Public Meetings:**

The Design-Build Firm shall provide all support necessary for the Department to hold various public meetings, which may include:

- Kick-off or introductory meeting
- Metropolitan Planning Organization (MPO) Citizens Advisory Committee Meetings
- MPO Transportation Technical Committee Meetings
- MPO Meetings
- Public Information Meetings
- Elected and appointed officials
- Special interest groups (private groups, homeowners associations, environmental groups, minority groups and individuals)

For any of the above type meetings the Design-Build Firm shall provide all technical assistance, data and information necessary for the Department to produce display boards, printed material, video graphics, computerized graphics, etc., and information necessary for the day-to-day exchange of information with the public, all agencies and elected officials in order to keep them informed as to the progress and impacts that the proposed Project will create. This includes workshops, information meetings, and public hearings.

The Design-Build Firm shall, on an as-needed basis, attend the meetings with an appropriate number of personnel to assist the Department. The Design-Build Firm shall forward all requests for group meetings to the Department. The Design-Build Firm shall inform the Department of any meetings with individuals that occur without prior notice.

4. **Public Workshops, Information Meetings:**

The Design-Build Firm shall provide all the support services listed in No. 3 above.
All legal/display ads announcing workshops, information meetings, and public meetings will be prepared

and paid for by the Design-Build Firm.

5. **Public Involvement Data:**

The Design-Build Firm is responsible for the following:

- Identifying possible permit and review agencies and providing names and contact information for these agencies to the Department.
- Providing required expertise (staff members) to assist the Department on an as-needed basis.
- Preparing color graphic renderings and/or computer generated graphics to depict the proposed improvements for coordination with the Department, local governments, and other agencies.

The collection of public input occurs throughout the life of the Project and requires maintaining files, newspaper clippings, letters, and especially direct contacts before, during and after any of the public meetings. Articles such as those mentioned shall be provided to the Department for their use and records.

In addition to collecting public input data, the Design-Build Firm may be asked by the Department to prepare responses to any public inquiries as a result of the public involvement process. The Department shall review all responses prior to mailing.

O. Quality Management Plan (QMP):

1. **Design:**

The Design-Build Firm shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications, geotechnical and other services furnished by the Design-Build Firm under this contract.

The Design-Build Firm shall provide a Design Quality Management Plan, which describes the Quality Control (QC) procedures to be utilized to verify, independently check, and review all design drawings, specifications, and other documentation prepared as a part of the contract. In addition the QMP shall establish a Quality Assurance (QA) program to confirm that the Quality Control procedures are followed. The Design-Build Firm shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The QMP may be one utilized by the Design-Build Firm, as part of their normal operation or it may be one specifically designed for this Project. The Design-Build Firm shall submit a QMP within fifteen (15) working days following issuance of the written Notice to Proceed. A marked up set of prints from the Quality Control review will be sent in with each review submittal. The responsible Professional Engineers or Professional Surveyor that performed the Quality Control review, as well as the QA manager will sign a statement certifying that the review was conducted.

The Design-Build Firm shall, without additional compensation, correct all errors or deficiencies in the surveys, designs, drawings, specifications and/or other services.

No fabrication, casting, or construction will occur until all related design review and shop drawing review comments are resolved.

2. **Construction:**

The Design-Build Firm shall be responsible for developing and maintaining a Construction Quality Control Plan in accordance with Section 105 of Standard Specifications which describes their Quality Control procedures to verify, check, and maintain control of key construction processes and materials.

The sampling, testing and reporting of all materials used shall be in compliance with the Sampling, Testing and Reporting Guide (STRG) provided by the Department. The Design-Build Firm will use the Department's database(s) to allow audits of materials used to assure compliance with the STRG. The Department has listed the most commonly used materials and details in the Department's database. When materials being used are not in the Department's database list, the Design-Build Firm shall use appropriate material details from the STRG to report sampling and testing. Refer to the "Access Instruction for LIMS" for more information on how to gain access to the Department's databases: http://www.dot.state.fl.us/statematerialsoffice/quality/programs/qualitycontrol/contractor.shtm

Prepare and submit to the Engineer a Job Guide Schedule (JGS) using the Laboratory Information Management System (LIMS) in accordance with Section 105 of Standard Specifications.

The Department shall maintain its rights to inspect construction activities and request any documentation from the Design-Build Firm to ensure quality products and services are being provided in accordance with the Department's Materials Acceptance Program.

P. Liaison Office:

The Department and the Design-Build Firm will designate a Liaison Office and a Project Manager who shall be the representative of their respective organizations for the Project.

Q. Engineers Field Office:

The Design-Build Firm will provide, furnish and maintain one (1) 900 square-foot Engineers Field Office in accordance with Special Provision 109. The field office shall be for Department use only. The field office shall be located in an area that has reasonable access to high speed internet access. The field office shall be available for Department use for the duration of contract days plus 60 days.

R. Schedule of Values:

The Design-Build Firm will be responsible for invoicing the Department based on current invoicing policy and procedure. Invoicing will be based on the completion or percentage of completion of major, well-defined tasks as defined in the schedule of values. Final payment will be made upon final acceptance by the Department of the Design-Build Project. Tracking DBE participation will be required under normal procedures according to the CPAM. The Design-Build Firm must submit the schedule of values to the Department for approval. No invoices shall be submitted prior to Department approval of the schedule of values.

Upon receipt of the invoice, the Department's Project Manager will make judgment on whether or not work of sufficient quality and quantity has been accomplished by comparing the reported percent complete against actual work accomplished.

S. Computer Automation:

The Project shall be developed utilizing computer automation systems in order to facilitate the

development of the contract plans. Various software and operating systems were developed to aid in assuring quality and conformance with Department of Transportation policies and procedures. Seed Files, Cell Libraries, User Commands, MDL Applications and related programs developed for roadway design and drafting are available for the MicroStation V8 format in the FDOT CADD Software Suite. However, it is the responsibility of the Design-Build Firm to obtain and utilize current Department releases of all CADD applications.

The Design-Build Firm's role and responsibilities are defined in the Department's CADD Manual. The Design-Build Firm will be required to submit final documents and files which shall include complete CADD design and coordinate geometry files in Intergraph / Micro station format, as described in the above referenced document.

The archived submittal shall also include either a TIMS database file, CADD Index file (generated from RDMENU) or documentation that shall contain the Project history, file descriptions of all (and only) Project files, reference file cross references, and plotting criteria a (e.g. batch, level symbology, view attributes, and display requirements). A printed directory of the archived submittal shall be included.

T. Construction Engineering and Inspection:

The Department is responsible for providing Construction Engineering and Inspection (CEI) and Quality Assurance Engineering.

The Design-Build Firm is subject to the Department’s Independent Assurance (IA) Procedures.

U. Testing:

The Department or its representative will perform verification and resolution sampling and testing activities at both on site, as well as, off site locations such as pre-stress plants, batch plants, structural steel and weld, fabrication plants, etc. in accordance with the latest Specifications.

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V. Value Added:

The Design-Build Firm may provide Value Added Project Features, in accordance with Article 5-14 of the Specifications for the following features:

- Specified ITS field elements and software not listed in the APL
- And any other products or features the Design-Build Firm desires.

The Design-Build Firm shall develop the Value Added criteria, measurable standards, and remedial work plans in the Design-Build Firm's technical proposal for features proposed by the Design-Build Firm.

W. Adjoining Construction Projects:

The Design-Build Firm shall be responsible for coordinating construction activities with other construction Projects that are impacted by or impact this Project. This includes Projects under the jurisdiction of local governments, the Department, or other regional and state agencies.

X. Design Issue Escalation:

The Department has established the issue escalation process for design questions and conflict resolution

that the Design-Build Firm shall follow unless revised by the Partnering agreement. All issues are to be directed to the Department Project Manager. If the issue cannot be resolved at this level the Department Project Manager shall forward the issue to the next level in the process. The escalation process begins with the District Design Engineer, followed by the Director of Transportation Operations, and finally to the District Secretary. Each level shall have a maximum of three (3) calendar days (excluding weekends and Department observed holidays), to answer, resolve or address the issue. The three (3) calendar day (excluding weekends and Department observed holidays) period is a response time and does not infer resolution. Questions may be expressed verbally and followed up in writing. The Department Project Manager will respond in a timely manner but not to exceed three (3) calendar days (excluding weekends and Department observed holidays). The Design-Build Firm shall provide any available supporting documentation.

The Design-Build Firm shall provide a similar issue escalation process for their organization with personnel of similar levels of responsibility.

The District Secretary will have the final authority on design decisions.

Y. Construction Clarification, Conflict Resolution, and Issue Escalation:

In the event that construction problems occur, the resolution of those problems will be processed in one of the following two ways unless revised by a Partnering agreement:

- If the resolution does not change the original intent of the technical proposal/RFP, then the Design-Build Firm Engineer of Record (EOR) will be responsible for developing the design solution to the construction problem and the Resident Engineer will be responsible for review and response within ten (10) calendar days (excluding weekends and Department observed holidays). The Resident Engineer will either concur with the proposed solution or, if the District Resident Engineer has concerns, the issue will be escalated as described in the process below**.**

- If the resolution does alter the original intent of the technical proposal/RFP then the EOR will develop the proposed solution, copy in the Resident Engineer, and send it to the District Construction Office for review and response through the Department Project Manager. The District Construction Office will respond to the proposed solution within ten (10) calendar days (excluding weekends and Department observed holidays. The District Construction Office will either concur with the proposed solution or, if the Resident Engineer has concerns, the issue will be escalated as described in the process below. Changes to the original intent of the technical proposal/RFP will require a contract change order and FHWA approval.

- The Department has established the issue escalation process for construction questions and conflict resolution that the Design-Build Firm shall follow unless revised by the Partnering agreement. All issues are to be directed to the Department Project Manager. If the issue cannot be resolved at this level the Department Project Manager shall forward the issue to the next level in the process. The escalation process begins with the District Construction Engineer, followed by the Director of Transportation Operations, and finally to the District Secretary. Each level shall have a maximum of three (3) calendar days

(excluding weekends and Department observed holidays) to answer, resolve or address the issue. The three (3) calendar day (excluding weekends and Department observed holidays) period is a response time and does not infer resolution. Questions may be expressed verbally and followed up in writing. The Department Project Manager will respond in a timely manner but not to exceed three (3) calendar days (excluding weekends and Department observed holidays). The Design-Build Firm shall provide any available supporting documentation.

The Design-Build Firm shall provide a similar issue escalation process for their organization with personnel of similar levels of responsibility.

Should an impasse develop, the Dispute Review Board shall assist in the resolution of disputes and claims arising out of the work on the Contract.

VI. Design and Construction Criteria.

A. General:

The Design-Build Firm shall be responsible for: detailed plan checking as outlined in the Plans Preparation Manual (PPM); as described in the RFP; and the Design and Construction criteria package. This includes a checklist of the items listed in the PPM for each completed phase submittal. Roadway submittals may be broken down into grading, drainage, walls, ITS, signing & pavement marking, signalization, lighting and final geometry components. The component design must be in conformity with the Design and Construction Criteria requirements, approved preliminary layout and concept as provided in the Technical Proposal.

Before construction activities can begin for a specific component, signed and sealed design plans and calculations supporting the design for that component must be reviewed by the Department. Component submittals shall be complete submittals along with all the supporting information necessary for review. The work must represent logical work activities and must show impacts on subsequent work on this Project. Any modification to the component construction due to subsequent design changes as the result of design development is solely the Design-Build Firm's risk. Upon review by the Department, the plans will be stamped "Released for Construction" and initialed and dated by the reviewer. Any construction initiated by the Design-Build Firm prior to receiving signed and sealed plans stamped "Released for Construction" shall be at the sole risk of the Design-Build Firm.

All design and construction work completed under the Contract shall be in accordance with the United States Standard Measures.

B. Geotechnical Services

Drilled Shaft Foundations for Bridges and Miscellaneous Structures

The Design-Build Firm shall be responsible for the following:

1. Evaluating geotechnical conditions to determine the drilled shaft diameter and length and construction methods to be used.
2. Preparing and submitting Drilled Shaft Installation Plan for Department's acceptance.
3. Determining the production shaft lengths.

4. Constructing all drilled shafts to the required tip elevation and socket requirement in accordance with the specifications.
5. Inspecting and documenting the construction of all drilled shafts in accordance with the specifications.
6. Performing Cross-Hole Sonic Logging (CSL) tests on all nonredundant drilled shafts supporting bridges. For redundant drilled shaft bridge foundations and drilled shafts for miscellaneous structures, perform CSL on any shaft suspected of containing defects.
7. Repairing all detected defects and conducting post repair integrity testing using 3D tomographic imaging and gamma-gamma density logging.
8. Submitting Foundation Certification Packages in accordance with the specifications.
9. Providing safe access, and cooperating with the Department in verification of the drilled shafts, both during construction and after submittal of the certification package.

Spread Footings Foundations

The Design-Build Firm shall be responsible for the following:

1. Evaluating geotechnical conditions and designing the spread footing.
2. Constructing the spread footing to the required footing elevation, at the required soil or rock material, and at the required compaction levels, in accordance with the specifications.
3. Inspecting and documenting the spread footing construction.
4. Submitting Foundation Certification Packages in accordance with the specifications.
5. Providing safe access, and cooperating with the Department in verification of the spread footing, both during construction and after submittal of the certification package.

C. Utility Coordination

The Design-Build Firm shall utilize a single dedicated person responsible for managing all utility coordination. This person shall be contractually referred to as the Utility Coordination Manager and shall be identified in the Design-Build Firm's proposal. The Design-Build Firm shall notify the Department in writing of any change in the identity of the Utility Coordination Manager. The Utility Coordination Manager shall have the following knowledge, skills, and abilities:

1. A minimum of 4 years of experience performing utility coordination in accordance with Department standards, policies, and procedures.
2. Knowledge of the Department plans production process and utility coordination practices,
3. Knowledge of Department agreements, standards, policies, and procedures.

The Design-Build Firm's Utility Coordination Manager shall be responsible for managing all utility coordination, including, but not limited to, the following:

1. Ensuring that all utility coordination and activities are conducted in accordance with the requirements of the Contract Documents.
2. Identifying all existing utilities and coordinating any new installations. Reviewing proposed utility permit application packages and recommending approval/disapproval of each permit application based on the compatibility of the permit as related to the Design-Build firm's plans.
3. Scheduling utility meetings, preparing and distributing minutes of all utility meetings, and ensuring expedient follow-up on all unresolved issues.

4. Distributing all plans, conflict matrices and changes to affected Utility Agency/Owners and making sure this information is properly coordinated.
5. Identifying and coordinating the execution and performance under any agreement that is required for any utility work needed in with the Design-Build Project.
6. Preparing, reviewing, approving, signing, coordinating the implementation of and submitting to the Department for review and acceptance, all Utility Work Schedules.
7. Resolving utility conflicts.
8. Obtaining and maintaining all appropriate Sunshine State One Call Tickets addressing both Sunshine State One Call subscribers and non Sunshine State One Call subscribers within the project limits.
9. Performing Constructability Reviews of plans prior to construction activities with regard to the installation, removal, temporary removal, de-energizing, deactivation, relocation, or adjustment of utilities.
10. Providing periodic Project updates to the Department Project Manager and District Utility Office as requested.
11. Coordination with the Department on any issues that arise concerning reimbursement of utility work costs.

The following UA/O's have been identified by the Department as having facilities within the Project corridor which may be impacted by the Project. Also provided below is a determination made by the Department as to the eligibility of reimbursement for each potentially impacted UA/O identified herein.

UA/O	Eligible for Reimbursement (Y/N)
Verizon FL	Y
Pasco County Utilities	Y
Bright House Networks	Y
Withlachoochee River Electric	Y
Florida Satellite Network LTD	Y
TECO Peoples Gas	Y
FSN Cable TV	Y
T W Telecom	Y
Progress Energy	Y
Tampa Bay Water	Y

D. Roadway Plans: N/A

E. Geometric:

The Design-Build Firm shall prepare the geometric design for the Project using the Design Standards that are most appropriate with proper consideration given to the design traffic volumes, adjacent land use, design consistency, aesthetics, ADA requirements, and this document.

The design elements shall include, but not be limited to, the horizontal and vertical alignments, lane widths, shoulder widths, median widths, cross slopes, borders, sight distance, side slopes, front slopes and ditches. The geometric design developed by the Design-Build Firm shall be an engineering solution that is not merely an adherence to the minimum AASHTO and/or Department standards.

F. Design Documentation, Calculations, and Computations:

The Design-Build Firm shall submit to the Department design documentation, notes, calculations, and computations to document the design conclusions reached during the development of the construction plans.

The design notes and computation sheets shall be fully titled, numbered, dated, indexed, and signed by the designer and the checker. Computer output forms and other oversized sheets shall be folded to a standard size 8½" x 11". The data shall be in a hard-back folder for submittal to the Department. At the Project completion, a final set of design notes and computations, signed by the Design-Build Firm, shall be submitted with the record set of plans and tracings.

The design documentation, notes, calculations and computations shall include, but not be limited to the following data:

1. Design standards used for the Project
2. Geometric design calculations for horizontal alignments
3. Vertical geometry calculations
4. Documentation of decisions reached resulting from meetings, telephone conversations or site visits

G. Structure Plans:

1. **Design Analysis**:

a. The Design-Build Firm shall submit to the Department final signed and sealed design documentation prepared during the development of the plans.

b. The Design-Build Firm shall insure that the final geotechnical recommendations and reports required for design are submitted with the 90% plans.

2. **Criteria**

The Design-Build Firm shall incorporate the following into the design of this facility:

a. All plans and designs are to be prepared in accordance with AASHTO LRFD Bridge Design Specifications, Department Standard Specifications, Structures Manual, Plans Preparation Manual, Department Standard Drawings, Supplemental Specifications, Special Provisions, and directions from the State Structures Design Engineer, Temporary Design Bulletins, Structures Design Office and / or District Structures Design Engineer.

c. Critical Temporary Retaining Walls: Whenever the construction of a structural component (such as a wall, footing, or other such component) requires excavation that may endanger the public or an existing structure that is in use the Design-Build Firm must protect the existing facility and the public. If a critical temporary retaining wall is, therefore, required during the construction stage only, it may be removed and reused after

completion of the work. Such systems as steel sheet pilings, soldier beams and lagging or other similar systems are commonly used. In such cases, the Design-Build Firm is responsible for designing detailing the wall in the set of contract plans. These plans must be signed and sealed by the Structural Engineer in responsible charge of the wall design.

H. Specifications:

Department Specifications may not be modified or revised. The Design-Build Firm shall also include all Technical Special Provisions, which will apply to the work in the proposal. Technical Special Provisions shall be written only for items not addressed by Department Specifications, and shall not be used as a means of changing Department Specifications.

Before construction activities can begin, the Design-Build Firm shall prepare and submit a signed and sealed Construction Specifications Package for the Project, containing all applicable Division II and III Special Provisions and Supplemental Specifications from the Specifications Workbook in effect at the time the Bid Price Proposals were due in the District Office. The Specifications Package shall be prepared, signed and sealed by the Design-Build Firms Engineer of Record who has successfully completed the mandatory Specifications Package Preparations Training.

The website for completing the training is at the following URL address:

http://www2.dot.state.fl.us/SpecificationsEstimates/PackagePreparation/TrainingConsultants.aspx

Specification Workbooks are posted on the Department's website at the following URL address:

https://www2.dot.state.fl.us/SpecificationsPackage/Utilities/Membership/login.aspx?ReturnUrl=%2fspecificationspackage%2fDefault.aspx.

The signed and sealed Specifications Package shall also include individually signed and sealed Technical Special Provisions for any and all work not addressed by Department Specifications. Any Technical Special Provisions included in the signed and sealed Construction Specifications Package which had not been included in the proposal phase, may require a contract cost modification as a condition of approval.

Upon review by the Department, the Construction Specifications Package will be stamped "Released for Construction" and initialed and dated by the reviewer.

Any subsequent modifications to the Construction Specifications Package shall be prepared, signed and sealed as a Supplemental Specifications Package, subject to the same process for submittal, review, and, release for construction, as described above, for the original Construction Specifications Package. Construction work affected by Supplemental Specifications Packages shall not begin until stamped "Released for Construction" Supplemental Specification Package is obtained.

I. Shop Drawings:

The Design-Build Firm shall be responsible for the preparation and approval of all Shop Drawings. Shop Drawings shall be in conformance with the Departments Plans Preparation Manual when submitted to the Department and shall bear the stamp and signature of the Design-Build Firm's Engineer of Record (EOR), and Specialty Engineer, as appropriate. The Department shall review the Shop Drawing(s) to evaluate compliance with Project requirements and provide any findings to the Design-Build Firm. The

Departments procedural review of shop drawings is to assure that the Design-Build Firm's EOR has approved and signed the drawing, the drawing has been independently reviewed and is in general conformance with the plans. The Departments review is not meant to be a complete and detailed review. Upon review of the shop drawing, the Department will stamp "Released for Construction" or "Released for Construction as noted" and initialed and dated by the reviewer.

Shop Drawing submittals must be accompanied by sufficient information for adjoining components or areas of work to allow for proper evaluation of the Shop Drawing(s) submitted for review.

J. Sequence of Construction:

The Design-Build Firm shall construct the work in a logical manner and with the following objectives as guides:

1. Maintain or improve, to the maximum extent possible, the quality of existing traffic operations, both in terms of flow rate and safety, throughout the duration of the Project.
2. Minimize the number of different Traffic Control Plan (TCP) phases, i.e., number of different diversions and detours for a given traffic movement.
3. Take advantage of newly constructed portions of the permanent facility as soon as possible when it is in the best interest of traffic operations and construction activity.
4. Maintain reasonable direct access to adjacent properties at all times, with the exception in areas of limited access right-of-way where direct access is not permitted.
5. Proper coordination with adjacent construction Projects and maintaining agencies. Adjacent construction projects include FPID 410909-9-52-01, 258736-2-52-01, 254677-1 and 408459-4-52-01.

K. Stormwater Pollution Prevention Plans (SWPPP)

The Design-Build Firm shall prepare a Storm Water Pollution Prevention Plan (SWPPP) as required by the National Pollution Discharge Elimination System (NPDES). The Design-Build Firm shall refer to the Department's Project Development and Environment Manual and Florida Department of Environmental Protection (FDEP) Rule 62-621.300(4)(a) for information in regard to the SWPPP. The SWPPP and the Design-Build Firm's Certification (FDEP Form 62-621.300(4)(b) **NOTICE OF INTENT (NOI) TO USE GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES)** shall be submitted for Department review and approval. Department approval must be obtained prior to beginning construction activities.

L. Temporary Traffic Control Plan:

1. Traffic Control Analysis:

The Design-Build Firm shall design a safe and effective Temporary Traffic Control Plan to move vehicular traffic during all phases of construction. Topics to be addressed shall include, but are not limited to, construction phasing, utility relocation, drainage structures, signalization, ditches, front slopes, back slopes, drop offs within clear zone, and traffic monitoring sites. Special consideration shall be given to the drainage system when developing the construction phases. Positive drainage must be maintained at all times.

The Temporary Traffic Control Plan shall address how to assist with maintenance of traffic throughout the duration of the contract.

The Temporary Traffic Control Plan shall be prepared by a certified designer who has completed the Department's training course, and in accordance with the Department's Design Standards and the Roadway Plans Preparation Manual.

Transportation Management Plans (TMPs) are required for significant Projects which are defined as:

1. A Project that, alone or in combination with other concurrent Projects nearby, is anticipated to cause sustained work zone impacts**.**

2. All Interstate system Projects within the boundaries of a designated Transportation Management Area (TMA) that occupy a location for more than three days with either intermittent or continuous lane closures shall be considered as significant Projects.

For significant Projects a TMP will consist of three components:

(1) Temporary Traffic Control (TTC) plan component;
(2) Transportation Operations (TO) component; and
(3) Public Information (PI) component

Additional information can be found in chapter 10 of the PPM.

2. **Temporary Traffic Control Plans:**

The Design-Build Firm shall utilize Index Series 600 of the Department's Design Standards where applicable. Should these standards be inadequate, a detailed Temporary Traffic Control Plan shall be developed. The Design-Build Firm shall prepare plan sheets, notes, and details to include the following: typical section sheet(s), general notes and construction sequence sheet(s), typical detail sheet(s), traffic control plan sheet(s).

The Design-Build Firm shall prepare additional plan sheets such as cross sections, profiles, drainage structures, retaining wall details, and sheet piling as necessary for proper construction and implementation of the Temporary Traffic Control Plan.

Existing ITS components must be maintained and operational at all times.

3. **Traffic Control Restrictions:**

There will be NO LANE CLOSURES ALLOWED between the hours of **5** AM to **11** PM for the Interstate NB and SB. Traffic Pacing shall only be allowed between the hours of 1:00 AM and 5:00 AM. There will be NO LANE CLOSURES ALLOWED between the hours of **5** AM and **11** PM for SR 56 and SR 54**.** A lane may only be closed during active work periods. Pacing operations will be allowed during the approved lane closure hours. All lane closures, including ramp closures, must be reported to the local emergency agencies, the media and the District Public information officer. Also, the Design-Build Firm shall develop the Project to be able to provide for all lanes of traffic to be open in the event of an emergency.

NO LANE CLOSURES are allowed on the Project during the times shown below so as to minimize potential impacts to the following events:

No Special Events have been identified.

Any detours shall be included in the Temporary Traffic Control Plan and approved by the Department. The Design-Build Firm shall obtain written approval from local agencies for detours that utilize or otherwise impact roadways that are under the jurisdiction of those local agencies.

M. Environmental Services/Permits/Mitigation:

The Design-Build Firm will be responsible for preparing designs and proposing construction methods that are permitable. The Design-Build Firm will be responsible for any required permit fees. All permits required for a particular construction activity will be acquired prior to commencing the particular construction activity. Delays due to incomplete or erroneous permit application packages, agency rejection, agency denials, agency processing time, or any permit violations, except as provided herein, will be the responsibility of the Design-Build Firm, and will not be considered sufficient reason for a time extension or additional compensation. As the permitee, Department is responsible for reviewing, approving, signing, and submitting the permit application package including all permit modifications, or subsequent permit applications.

If the Department has determined that suitable gopher tortoise habitat exists in the project area, then the Design-Build Firm shall be responsible for the potential gopher tortoise burrow survey that could be impacted by the Project including any areas to be used for construction staging. The habitat shall be systematically surveyed according to the current "Gopher Tortoise Permitting Guidelines" published by the Florida Fish and Wildlife Conservation Commission (FWC). All coordination by the Design-Build Firm with the Department regarding gopher tortoises will be completed through the District Environmental Permit Office. The Department must verify the completeness and accuracy of the assessment prior to any permitting or construction activities. The Department shall have fifteen (15) days to verify the assessment once submitted by the Design-Build Firm.

Any areas where the Design-Build Firm proposes to protect burrows to remain on-site with "exclusionary fencing" shall be reviewed and approved by the Department. The Design-Build Firm shall submit an "exclusionary fencing" plan for review prior to any "exclusionary fencing" installation. The Department shall have fifteen (15) days to review the "exclusionary fencing" plan once submitted by the Design-Build Firm.

If there are unavoidable impacts to gopher tortoise burrows, the Design-Build Firm shall be responsible for acquisition of a gopher tortoise relocation permit. Preparation of complete permit packages will be the responsibility of the Design-Build Firm. As the permitee, the Department is responsible for reviewing and approving the permit application package including all permit modifications, or subsequent permit applications. This applies whether the project is Federal or state funded. The Design-Build Firm shall submit permit applications while acting as an authorized representative for the Department for permitting purposes only. If any agency rejects or denies the permit application, it is the Design-Build Firm's responsibility to make whatever changes necessary to ensure the permit is approved.

Once the permit is obtained, the Design-Build Firm shall notify the Department at least one week prior to the relocation of gopher tortoises. If relocations are phased throughout the construction, the Design-Build Firm shall notify the Department at least one week prior to each relocation phase. The Department will provide oversight of the relocations and ensure permit compliance.

The Design-Build Firm shall be responsible for any necessary time extensions or re-permitting in order to

keep the relocation permit valid throughout the construction period. The Design-Build Firm shall provide the Department with draft copies of requests to modify the permits and/or requests for time extensions, for review and approval by the Department prior to submittal to the agencies. The Department shall have fifteen (15) days to review and provide comments on the draft submittals.

The Design-Build Firm shall provide the appropriate reports as required by the permit conditions, including closing out the permit. The Department shall have fifteen (15) days to review any reports developed by the Design-Build Firm prior to submittal to FWC.

The Design-Build Firm shall note that permits for gopher tortoise relocation for areas outside of the Department owned right of way (i.e. utility easements, license agreements) cannot be obtained with the Department as the "permittee", per FWC requirements. Should permits in areas outside of the right of way be required, the Department will still perform the oversight of the process as described above.

The Design-Build Firm shall be required to pay all permit fees including any and all fees associated with the relocation of gopher tortoises. Any fines levied by permitting agencies shall be the responsibility of the Design-Build Firm.

N. Signing and Pavement Marking Plans: N/A

O. Lighting Plans: N/A

P. Intelligent Transportation System Plans:

1. The Design-Build Firm shall be responsible for designing the entire ITS to be fully integrated into the existing Tampa Bay SunGuide™ Program. The Department has developed one integrated and readily scalable system configuration for future District-wide ITS deployments. The ITS shall be designed to operate from the Tampa Bay SunGuide™ Regional Transportation Management Center (RTMC) and incorporate such functional capabilities as an Incident Detection System, Vehicle Detection System, advanced traveler information system, advanced traffic management system, and data storage, retrieval and analysis. The ITS shall encompass a myriad of advanced technologies including hardware integration, MVDS, CCTV cameras, DMS, ADMS, RWIS, HAR and fiber optic and wireless communications systems.

2. The Design-Build Firm shall prepare the ITS plans package. This work effort shall include the design of a complete ITS utilizing a Microwave Vehicle Detection System (MVDS) subsystem, Closed-Circuit Television (CCTV) Camera subsystem, Highway Advisory Radios (HAR) subsystem, Road Weather Information System (RWIS), Dynamic Message Signs (DMS) and Arterial Dynamic Message Signs (ADMS) subsystems, and fiber optic and wireless communications subsystems. For locations of the ITS and communications subsystems, see the table below.

ITS and Communications Subsystems Location Requirements	
ITS Subsystems	
I-75 Southbound Traversing South to SR 56 Along the Compass	
Freeway DMS	Approximate Location

1	400 feet south of SB on ramp gore area to I-75 from SB Rest Area
CCTV	Approximate Location
1	At I-75/CR 54 interchange
2 & 3	Installed at 1- mile intervals along the I-75 SB through lanes from SR 54/CR 54 to SB Rest Area to detect the through lanes only
4	At SB on ramp gore area at I-75 from SB Rest Area
5	Installed at 1- mile intervals along the I-75 SB through lanes from SB Rest Area to SR 56 to detect the through lanes only
MVDS	Note
-	Installed at one-half mile intervals along the I-75 Southbound from SR 54 to SR 56 to detect the through lanes only
HAR	Note
1	At locations determined by Design-Build Firm
I-75 Northbound Traversing North to SR 54/CR 54 Along the Compass	
Freeway DMS	Approximate Location
1	1070 feet north of NB sign structure ID# 14S253
CCTV	Approximate Location
1	At NB on ramp gore area to I-75 from NB Rest Area
SR 56	
Arterial DMS	Approximate Location
1	3000 feet west of I-75 mainline along EB SR 56
2	3000 feet east of I-75 mainline along WB SR 56
SR 54/CR 54	
Arterial DMS	Approximate Location
1	At Gas Station on EB CR 54 east of Gateway Blvd
2	On WB SR 54/CR 54 east of Bruce B Downs Blvd
Communications Subsystems	
Wireline	Notes
1	On the southern terminus of project, tie in new 72-count fiber optic backbone to existing fiber optic splice enclosure at NW quadrant of the I-75/SR 56 interchange
2	On the northern terminus of project, cap and coil new 72-count fiber optic backbone at proposed fiber optic splice box for the CCTV camera at NW quadrant of I-75/SR 54 interchange
RWIS	Notes
1	One RWIS with visibility and wind sensors to be located within project limit. See MTR for further detail.
Conduits	Notes
1	Install one 4 inch HDPE conduit with three 1 inch innerducts between pull boxes to be located within 5 feet of NB and SB Rest Area buildings for future use. These

	conduit runs shall also be connected to the conduit system for FOC backbone for future connections.

3. Freeway DMS are preferred to be on independent overhead sign support structures.

4. Freeway DMS and associated sign supports shall be referenced in the static guide sign plans.

5. Freeway DMS are to be located on overhead truss spans. The Freeway DMS shall be centered over the center through lanes. ADMS are to be located only on overhead truss cantilevers.

6. The MVDS will be installed on overhead static guide sign structures and steel camera poles along the mainline. The MVDS will also be installed on concrete poles, as necessary, to provide the desired one-half mile interval placements.

7. The Design-Build Firm shall perform all surveys, site visits, utility coordination, electrical service coordination, subsurface utility engineering (SUE) services, geotechnical services, foundation design and maintenance of traffic plan development that are necessary, including coordination with other elements of the project, for the complete design of the proposed ITS.

8. ITS communications conduit, splices, pull boxes, splice boxes, power poles, cabinets and devices shall be placed within 10 feet of the Right-of-Way line, or as close as possible, unless otherwise noted (see the ITS MTR for more information), to reduce future relocation or replacement without affecting existing system operation.

9. The Design-Build Firm shall also establish the necessary electrical power service, meter addresses, and accounts on behalf of the Department. Submit letters of request to acquire electrical power service from the power company to the Department Project Manager and/or Operations Manager for approval from District ITS, Maintenance and CEI. The associated costs, including the monthly power service bills, for any new power service established shall be paid by the Design-Build Firm until Final Acceptance of the project.

10. The Design-Build Firm shall procure and install all new equipment, field elements, communications infrastructure and the associated components. The equipment to be procured shall meet the requirements of the NTCIP protocol (if applicable) versions supported by the SunGuide^{TM} software specified in the ITS MTR. The Design-Build Firm is responsible for ensuring the proposed ITS field elements are on the Approved Product List (APL) and are 100 percent compatible with the SunGuide^{TM} software at the time of deployment.

11. The Design-Build Firm shall submit cut sheets for all proposed technologies/products that are to be procured for the project, along with selection alternatives and the reasons for selection, to the Department for acceptance. The Department or its representative may request additional information and/or demonstration of the equipment for approval and the Department reserves the right

to reject any equipment that in its discretion is determined to be non-compliant with the Department's design standards, specifications or the requirements of this project.

12. The Design-Build Firm may request review and release by the Department of an individual subsystem design in order to allow advanced procurement of equipment that requires a longer lead time. However, the Department reserves the right to evaluate this request based on the requirements included in this RFP, the impact to minimum system functionality or maintainability and the needs of the traveling public. The Department's decision shall be final and the Design-Build Firm shall solely bear any associated costs or delays.

13. All components, equipment and subsystems furnished and installed by the Design-Build Firm shall be tested to determine conformance with project requirements and Contract Documents. The Design-Build Firm shall provide an ITS Inspection and Testing Plan (part of the P-SEMP) to the Department for review prior to conducting any testing or inspection services. The ITS Inspection and Testing Plan shall include: test requirements, procedures and conditions; acceptance criteria and the specific element of the Design Criteria requiring the test; and the associated necessary resources and those responsible for each type of test. Independent factory acceptance testing by the Design-Build Firm shall not be required for any proposed field elements included on the Approved Product List (APL). See the ITS MTR for more information on ITS testing requirements.

14. The Design-Build Firm shall be responsible for the integration of all ITS and communications subsystems between the existing hubs at either end of the project Once the Design-Build Firm has installed and supplied the power and communications interconnect to each ITS device as stated in the plans and specifications and approved by the CEI, the Design-Build Firm shall integrate each device into the passive communications network built as part of Financial Project 410909-9-52-01. The Design-Build Firm shall coordinate with the Department Project Manager and/or Operations Manager a schedule of installation and integration. Once the Design-Build Firm has completed the installation of fiber plant and devices and receives acceptance by the CEI, the Design-Build Firm shall then field integrate the ITS devices/cabinets in accordance with the approved schedule. The Design-Build Firm shall verify that all ITS devices are in the correct locations and are functioning properly at each location at the time of installation and integration. The Design-Build Firm shall verify communications between all ITS devices as designed, between each ITS device location, and between all communications hubs. The Design-Build Firm shall install and integrate all active layer 2 communications components and layer 2 communications equipment in all communications hubs. This shall include, but is not limited to, field switches, video encoders, device servers, UPSs, remote power management devices, RWIS controllers, DMS controllers, HAR controllers, elevator phone interfaces, alarm interfaces, and all cables and connectors necessary for the successful operation of the communications system. Excluded is modification of any existing or new Core Switches/Routers operating at Layer 2 or Layer 3. Such devices shall be configured by the DEPARTMENT or other DEPARTMENT CONTRACTOR. Mutual testing shall occur of system field device communications. The Design-Build Firm shall provide a Field Integration Checklist indicating that all integration tasks have been completed and are documented. DEPARTMENT or other DEPARTMENT

contractor will perform configuration of the existing Hub switch and SunGuide^{TM}. (see the ITS MTR for more information).

15. The Design-Build Firm shall provide all equipment, parts, and configuration data necessary to integrate the ITS and communications subsystems RTMC. The Design-Build Firm shall integrate Layer 2. Layer 3 shall be integrated by the Design Build Firm in coordination with District RTMC Staff. (see the ITS MTR Section 4.3.1 for more information).

16. The Design-Build Firm shall provide complete and comprehensive documentation of all elements of this project as specified in the ITS MTR.

17. The Design-Build Firm shall be responsible to provide locates throughout the corridor for any portion(s) of the proposed system for the duration of the project when requested by the Department or third parties authorized to work within the project limits.

18. The Design-Build Firm shall prepare design plans and provide necessary documentation for the procurement and installation of the ITS. The Design-Build Firm shall submit 90%, and Final (100%) design plans and technical specifications packages to the Department for review and approval.

19. The construction plan sheets identifying the final design shall include, but not be limited to:

    - Title sheet
    - Tabulation of Quantities, with reference to FDOT Pay Item Numbers
    - General Notes and Pay Item Notes
    - Legend
    - Pole Data Sheet
    - Project Layout/Overview sheets outlining the locations of ITS field elements
    - Fiber optics communications and outside plant facilities and routing index sheets
    - Plan sheets providing details on ITS field device locations and interface with the fiber optics communications cables, fiber optic cable routing and outside plant facilities including pull boxes, cabinets, fiber optic vaults, outlying structures and roadways, etc.,
    - Roadway cross-sections at ITS field device locations
    - Detail sheets for all field elements included in the final design such as mounting details, cabinet wiring diagrams, electrical wiring diagrams, power network, conduit, grounding array and surge protection diagrams, etc.
    - Geotechnical information supporting ITS foundation and structure design.

The above-referenced sheets shall be included as a minimum at the 90% submittal phase. Each subsequent submittal shall include additional information which advances the design.

20. The Design-Build Firm shall prepare, submit and seek Department approval for all the required Plans, schematic diagrams, cabling/wiring diagrams, splice diagrams, and other pertinent information related to the equipment, materials and incidentals for the installation of ITS cabinets, CCTV cameras, DMS, ADMS, MVDS, HAR, communications network equipment, distribution conduit facilities, cabling, electrical power service and distribution, etc., prior to the commencement of the installation phase. (See the ITS MTR for more information on design requirements.)

21. The Design-Build Firm shall prepare detailed Modified Special Provisions and Technical Special Provisions, as needed and/or identified during the project design phase, that will expand on the minimum requirements included in the ITS MTR.

22. The Design Build Firm will use all efforts in order to avoid existing ITS facilities.

23. The Design Build Firm will coordinate with the Department for existing facility identification in accordance with Sunshine Law.

24. ITS contact representative; Ramona Burke 813-615-8613.

25. The Design Build Firm will be responsible for maintaining locates once provided by the Department.

26. The Design-Build Firm shall utilize the ITS Design and Construction Checklist referenced in the MTR. (See Attachments)

Q. Hazardous Materials

With the exception of Structure 140047, if a structure with a designated structure number is to be impacted by construction, the Design-Build Firm shall perform an asbestos survey on that structure (including but not limited to Structures 140125, 140129 and 140130), prior to performing any structure renovations, modifications, demolitions and drilling. The Department has performed an asbestos survey on Structure 140047 (provided as an "Attachment") and indicates no asbestos has been detected. If construction will impact the existing paint system on Structures 140129 and 140130, the Design-Build Firm is responsible for performing a paint survey of the existing paint system on these structures in order to identify if hazardous paint exists on that structure. The paint survey shall also include TCLP (Toxicity Characteristic Leaching Procedure) analysis and results that is representative of the existing paint system. Design-Build Firm shall submit to the Department a draft report reflecting their survey activities within two months of completing their work. The Department shall have up to two, separate comments and review periods of 20 calendar days each, of the Design-Build Firm's draft report. The second draft report and the final draft report shall reflect the Department's comments of the prior submitted report. Once approved, the Design-Build Firm shall provide a final report to the Department.

a. The Design-Build Firm shall secure the services of a Florida licensed asbestos consultant to perform comprehensive asbestos containing materials (ACM) surveys on existing structures, as necessary on the project. The survey shall include sampling of all suspect ACM.

b. The Design-Build Firm shall submit the associated structure survey reports (including an operation and maintenance (O&M) plan if asbestos and hazardous paint is identified) to the Department at a minimum of two months prior to any structure construction activities.

c. The Design-Build Firm shall utilize the attached "Building Asbestos Survey Specifications" to perform and report their asbestos survey.

If asbestos is identified, the Department's Contamination Assessment/Remediation Contractor (CAR) contractor shall perform asbestos abatement activities during construction, as necessary.

a. The Design-Build Firm shall provide written notification to the Department Engineer no more than two months and no less than one month prior to the date as to when the CAR can proceed with asbestos abatement activities. If the Design-Build Firm changes the date to one different than what is on the notification, the Design-Build Firm shall notify the Department Engineer immediately and the notification procedure stated above shall be followed again using a two week written notice for the CAR to proceed. The Department Engineer shall provide a copy of each notification to the CAR within three business days of being notified.

b. The Design-Build Firm and CAR shall coordinate with each other to provide the CAR ample and reasonable time, as well as staging and work areas necessary, for the CAR to perform asbestos abatement activities.

Asbestos survey reports shall be kept by the Design-Build Firm on the construction site and be available for review upon request.

The Department has performed an Updated Level I Hazardous Material and Contamination Investigation (dated 2009) associated with this corridor and is provided a "Referenced Document." Based on the Updated Level I Hazardous Material and Contamination Investigation report, The Department will perform Level II Assessment activities (within the FDOT Right-of-Way) in accordance with the FDOT Project Development and Environment Manual (PD&E), Part 2, Chapter 22, on Sites 7, 9, 10, 11, 13 and 14. The results of the Level II Assessment activities will be after the advertisement of this project but before the date the price proposals are due. The Design-Build Firm shall request the results and bid on this project based on the outcome of the Department's Level II assessment activities.

The Design-Build Firm shall comply with the items outlined in the attached "Contamination Plan Notes" and include those notes in the General Notes of the Project's Plans with the exception of those sites that are identified as not contaminated based on the Department's Level II assessment activities. The language pertaining to the identified contamination sites in the attached "Contamination Plan Notes" will be modified based on the Department's Level II Assessment Results. The Design-Build Firm shall incorporate the modifications to the identified contamination sites in their Contamination Plan Notes that are to be put in the Project Plans.

Remediation of contamination areas will be completed by the Department's CAR during construction.

The Design-Build Firm is responsible for obtaining their own National Pollutant Discharge Elimination System (NPDES) permit and to discharge produced groundwater from uncontaminated sites.

a. If the groundwater sample results collected by the Design-Build Firm fail NPDES permit criteria for the discharge of produced groundwater from any non-contaminated site activity,

the Design-Build Firm shall provide copies of their sample results and sample locations to the CAR within one business day of receiving their sample results. The CAR shall perform groundwater sampling to verify the Design-Build Firm's results. The CAR will notify the Department Engineer and Design-Build Firm of the results as soon as practical.

If necessary, the CAR will provide replacement backfill for all areas of contaminated soil removal in the form of FDOT-select fill at a 1 to 1 ratio (e.g. ton-for-ton) except at areas where contaminated soil is replaced with flowable fill. Flowable fill shall be the responsibility of the Design-Build Firm, at the cost of the Design-Build Firm.

If it is necessary for the CAR to provide treatment or disposal of contaminated groundwater, the Design-Build Firm shall not utilize the CAR's groundwater treatment system and/or disposal services to discharge water from uncontaminated areas. The Design-Build Firm shall provide one month written notice to the Department Engineer prior to any requests for each relocation of a CAR's groundwater treatment system.

a. The Design-Build Firm shall make every effort to complete work in areas where groundwater treatment systems are being used until the system is no longer required, prior to commencing work in other areas of the Project that require groundwater treatment prior to discharge.

For any necessary sanitary sewer connections and other dewatering discharge locations, in support of the Design-Build Firm's efforts required by the CAR, access and connection shall be maintained by the Design-Build Firm throughout the construction phase of this Project unless directed otherwise by the Department Engineer.

The Design-Build Firm shall be responsible for all above conditions and requirements as well as those that pertain to utility work associated with this project.

VII. Technical Proposal Requirements.

A. General:

Each Design-Build Firm being considered for this Project is required to submit a Technical Proposal. The proposal shall include sufficient information to enable the Department to evaluate the capability of the Design-Build Firm to provide the desired services. The data shall be significant to the Project and shall be innovative, when appropriate, and practical.

B. Submittal Requirements:

The Technical Proposal shall be bound with the information, paper size and page limitation requirements as listed herein.

A copy of the written Technical Proposal must also be submitted in .pdf format including bookmarks for each section on a CD. No macros will be allowed. Minimum font size of ten (10) shall be used. Times New Roman shall be the required font type. Only upon request by the Department, provide calculations, studies and/or research to support features identified in the Technical Proposal. This only applies during the Technical Proposal Evaluation phase.

Submit 1 Original, 1 CD, and 5 hard copies of the Technical Proposal to:

John Ellis, 11201 N McKinley Drive, Tampa, FL 33612

The minimum information to be included:

Section 1: Project Approach

- Paper size: 8½" x 11". The maximum number of pages shall be 10, single-sided, typed pages including text, graphics, tables, charts, and photographs. Double-sided 8½" x 11" sheets will be counted as 2 pages. 11”X17” sheets are prohibited.
- Describe how the proposed design solutions and construction means and methods meet the project needs described in this Request for Proposal. Provide sufficient information to convey a thorough knowledge and understanding of the project and to provide confidence the design and construction can be completed as proposed.
- Provide the term, measureable standards, and remedial work plan for any proposed Value Added features that are not Value Added features included in this RFP, or for extending the Value Added period of a feature that is included in this RFP. Describe any material requirements that are exceeded.
- Provide a Written Schedule Narrative that describes the Design and Construction phases and illustrates how each phase will be scheduled to meet the project needs required of this Request for Proposal. Bar or Gantt charts are prohibited. Do not reveal or describe the Proposed Contract Time.

Section 2: Plans and Technical Special Provisions

- Paper size: 11" x 17". Plan and Profile views of the proposed improvements may be submitted in roll-plot format. The maximum width of the roll-plots shall be 36”. The maximum length of the roll-plot shall be 8’. Inclusion of additional information on the roll-plot, other than depictions of the Plan and Profile views, is prohibited and will not be considered by the Proposal Evaluators, if included. The department may determine that such additional information is excessive and may require the Design-Build Firm to revise and resubmit the roll-plots. If this occurs, the Design-Build Firm will have 2 business days to revise and resubmit the roll-plots upon notification by the Department.
- Provide Technical Proposal Plans in accordance with the requirements of the Plans Preparation Manual.
- The Plans shall complement the Project Approach.
- Provide any Technical Special Provisions which apply to the proposed work. Paper Size: 8½" x 11".

C. Evaluation Criteria:

The Department shall evaluate the written Technical Proposal by each Design-Build Firm. The Design-Build Firm should not discuss or reveal elements of the price proposal in the written proposals.. A technical score for each Design-Build Firm will be based on the following criteria:

Item		Value
1.	Maintainability	15
2.	Value Added	5
3.	Design and Geotechnical Services Investigation	22
4.	Maintenance of Traffic	5
5.	Environmental Protection, Context Sensitive Design and Construction	5
6.	Construction Methods	23
7.	Utility Coordination	5
	Maximum Score	**80**

The following is a description of each of the above referenced items:

1. **Maintainability (15 points)**

Credit will be given for a design that minimizes periodic and routine maintenance. The following elements should be considered: access to provide adequate inspections and maintenance, maintenance of navigational system lighting, access to structure's lighting system, and quality of construction materials. Credit will be assigned for exceeding minimum material requirements to enhance durability of structural components.

2. **Value Added (5 points)**

Credit will be given for the extent of the Value Added coverage. Credit will be given for exceeding minimum material requirements to enhance durability of structural components.

3. **Design and Geotechnical Services Investigation (22 points)**

Credit will be given for the quality of the following elements:

- Project design (ITS, structures) Technical Detail Quality
- Design coordination and plans preparation schedule
- Construction coordination plan minimizing design changes
- Geotechnical investigation plan

4. **Maintenance of Traffic (5 points)**

Credit will be given for a MOT scheme that minimizes disruption of roadway traffic. This shall include, but not be limited to, minimization of lane and driveway closures, lane widths, visual obstructions, and drastic reductions in speed limits.

5. **Environmental Protection, Context Sensitive Design & Construction (5 points)**

Credit will be given for minimizing impacts to the environment during all phases of design and construction and insuring all environmental commitments are honored.

Aesthetics will be considered in geometry, economy and appropriateness of structure type, structure finishes, shapes, proportion and form. Architectural treatments such as tiles, colors, emblems, etc. will not be considered as primary aesthetic treatments.

6. **Construction Methods (23 points)**

Credit will be given for construction methods that minimize impacts to the traveling public, business owners, property owners and the environment; reduces costs; improves worker safety; and minimizes contract duration; Integration Method Quality.

7. **Utility Coordination (5 points)**

Credit will be given for minimizing impacts to UA/O's throughout all phases of design and construction.

D. Final Selection Formula:

The Selection Committee shall publicly open the sealed bid proposals and calculate an adjusted score using the following formula:

$$\frac{BPP}{TS} = \text{Adjusted Score}$$

BPP = Bid Price Proposal

TS = Technical Score (Combined Scores from ELOI and Technical Proposal)

The Design-Build Firm selected will be the Design-Build Firm whose adjusted score is lowest.

The Department reserves the right to consider any proposal as non-responsive if any part of the Technical Proposal does not meet established codes and criteria.

E. Final Selection Process:

After the sealed bids are received, the Department will have a public meeting for the announcement of the Technical Scores and opening of sealed Bid Price Proposals. This meeting will be recorded. At this meeting, the Department will announce the score for each member of the Technical Review Committee, by category, for each Proposer and each Proposer's average Technical Score. Following announcement of the technical scores, the sealed Bid Price Proposals will be opened and the adjusted scores calculated. The Selection Committee should meet a minimum of two (2) calendar days (excluding weekends and Department observed holidays) after the public opening of the Technical Scores and Bid Price Proposals. The Department's Selection Committee will review the evaluation of the Technical Review Committee and the Bid Price Proposal of each Proposer as to the apparent lowest adjusted score and make a final determination of the lowest adjusted score. The Selection Committee has the right to correct any errors in the evaluation and selection process that may have been made. The Department is not obligated to award the contract and the Selection Committee may decide to reject all proposals. If the Selection Committee decides not to reject all proposals, the contract will be awarded to the Proposer determined by the Selection Committee to have the lowest adjusted score.

F. Stipend Awards:

The Department has elected to pay a stipend to a limited number of non-selected Short-Listed Design-Build Firms to offset some of the costs of preparing the Proposals. The non-selected Short-Listed Design-Build Firms meeting the stipend eligibility requirements of the Project Advertisement and complying with the requirements contained in this section will ultimately be compensated. The stipend will only be payable under the terms and conditions of the Design-Build Stipend Agreement and Project Advertisement, copies of which are included with this Request for Proposal. This Request for Proposal does not commit the Department or any other public agency to pay any costs incurred by an individual firm, partnership, or corporation in the submission of Proposals except as set forth in the Design-Build Stipend Agreement. The amount of the stipend will be $21,000 per non-selected Short-Listed Design-Build Firm that meets the stipend eligibility requirements contained in the Project Advertisement. The stipend is not intended to compensate any non-selected Short-Listed Design-Build Firm for the total cost of preparing the Technical and Price Proposals. The Department reserves the right, upon payment of stipend, to use any of the concepts or ideas within the Technical Proposals, as the Department deems appropriate.

In order for a Short-Listed Design-Build Firm to remain eligible for a stipend, the Short-Listed Design-Build Firm must execute with original signatures and have delivered to the Department no later than one (1) week after the Short-List has been posted, four (4) originals of the Design-Build Stipend Agreement, Form No. 700-011-14. The Short-Listed Design-Build Firm shall reproduce the necessary copies. Terms of said agreement are non-negotiable. A fully executed copy of the Design-Build Stipend Agreement will be returned to the Short-Listed Design-Build Firm.

A non-selected Short-Listed Design-Build Firm eligible for stipend compensation must submit an invoice for a lump sum payment of services after the selection/award process is complete. The invoice should include a statement similar to the following: "All work necessary to prepare Technical Proposal and Price Proposals in response to the Department's RFP for the subject Project".

VIII. Bid Proposal Requirements.

A. Bid Price Proposal:

Bid Price Proposals shall be submitted on the Bid Blank form attached hereto and shall include one lump sum price for the Project and the number of calendar days within which the Proposer will complete the Project. The lump sum price shall include all costs for all design, geotechnical surveys, architectural services, engineering services, Design-Build Firms quality plan, construction of the Project, and all other work necessary to fully and timely complete that portion of the Project in accordance with the Contract Documents, as well as all job site and home office overhead, and profit, it being understood that payment of that amount for that portion of the Project will be full, complete, and final compensation for the work required to complete that portion of the Project. One (1) hard copy Bid Price Proposal shall be hand delivered in a separate sealed package to the following:

John D. Ellis

11201 N. McKinley Drive

Tampa, Fl 33612

The package shall indicate clearly that it is the Bid Price Proposal and shall identify clearly the Proposer's name, and Project description. The Bid Price Proposal shall be secured and unopened until the date specified for opening of Bid Price Proposals.

Florida Department of Transportation

ATTACHMENT

Intelligent Transportation Systems

(ITS)

MINIMUM TECHNICAL REQUIREMENTS

(MTR)

For

I-75 (SR 93) From N. of SR 56 to N. of SR 54, Pasco County

Financial Projects Number(s): 410909-4-52-01

Federal Aid Project Number(s): 0751-110 I

Contract Number: E7I24

Version 7.2

August ~~2~~13, 2013

Change Control Panel

Version #	Date	Edit by	Remarks
1.0	Dec 12, 2012	Anu Weerasuriya	Initial draft
2.0	Feb 17, 2013	Anu Weerasuriya	Incorporated directions from January 7, 2013 Scope Development Meeting at District 7.
3.0	Mar 20, 2013	Anu Weerasuriya	Incorporated comments from FDOT Central Office. Revisions reflect discussion with Greg Reynolds on March 20, 2013.
4.0	Mar 26, 2013	Wendy Ferjo	Incorporated comments from FDOT Central Office. Revisions reflect discussion with Greg Reynolds on March 25, 2013.
5.0	May 23, 2013	Anu Weerasuriya	Incorporated comments from FDOT Central Office
6.0	June 6, 2013	Wendy Ferjo	Revised Table of Contents
7.0	July 5, 2013	Wendy Ferjo	Added addendum items from ATC's, page 28, 29, 31
7.1	August 2, 2013	Wendy Ferjo	Added addendum items on page 30, Table 5
7.2	August 13, 2013	Anu Weerasuriya	Incorporated changes per responses to comments by D/B Firms

Spare Part Description	Quantities
MFES	2
Cat5E Patch Cables	20%
Fiber Patch Cables	20%
Device Servers	10%
Pull Boxes - electrical	1
PDU	10%
Transformers (by rating)	1 for each rating
UPS Assemblies and Batteries	10%
Electronic Box Markers	10
CCTV Cameras	2
Camera Lowering Devices	1
Lowering Cranks	1
Cabinets for CCTV Sites	1
Digital Video Encoders	2
Media Converters	2
CCTV Local Interface Control Units	2
~~DMS/ADMS Controller~~	~~1/1~~
~~DMS/ADMS Housing exhaust fan~~	~~1/1~~
~~DMS/ADMS Led fans~~	~~2/4~~
~~Internal DMS/ADMS Power Supply Assemblies~~	~~4/4~~
~~DMS/ADMS LED Panels~~	~~1/1~~
~~DMS/ADMS LED Driver Boards~~	~~2/2~~
Fiber Modem	2
Cabinets for DMS/ADMS Sites	1/1
HAR Controller	1
HAR Transmitter	1
HAR Power Supply	1
HAR Antenna	1
HAR Cabinet	1
HAR Beacon assemblies	1
HAR Beacon cabinets	1
RWIS Controller	1
RWIS sensors (each type)	1
RWIS Power Supply	1
RWIS Cabinet	1
RWIS Poles	1
Side-Fire MVDS assemblies	10%
NEMA Enclosures for MVDS Sites	2

Additionally, DMS/ADMS spare parts shall be provided per FDOT Specification Section 781-3.7 Operational Support Supplies.

The cost for each spare replaceable unit shall be included in the cost of the Project and no separate payment shall be allowed.

The Design-Build Firm shall submit the proposed DMS and ADMS locations to the Department for approval and shall demonstrate that the requirements of the MUTCD regarding minimum sign spacing are met. If a DMS or ADMS is proposed for placement on a structure with static guide signs, the Design-Build Firm shall demonstrate compliance with the MUTCD regarding numbers of signs and messages. The DMS and ADMS placements shall be closely coordinated with the both existing and proposed (see Section 3) signing.

The new DMS and ADMS shall meet the following requirements:

Table 4: I-75 DMS Requirements*

Requirement Description	I-75 DMS Values
Character Height	18”
Nominal Font Size	5 pixels wide by 8 pixels tall
Characters Per Line	21
Lines of Text	3
Full Matrix LED Display	~~125~~ 150 pixels wide by 36 ~~27~~ pixels tall
Pixel Color	RGB; 32,000 colors
Pixel Pitch	~~66~~ 34 mm
LED Viewing Cone	~~15~~ 30 degrees
Minimum Sign Intensity	12,400 cd/m^2
Enclosure Type	Walk-in
Support Structure Type	Full or Mid-Span

*DMS shall follow FDOT PPM, Volume 1, Chapter 7, Subsection 7.5.4.1

Table 5: SR 56 & CR 54 ADMS Requirements

Requirement Description	SR 56 & CR 54 ADMS Values
Character Height	As required by FDOT PPM, Volume 1, Chapter 7, Subsection 7.5.4.1
Nominal Font Size	5 pixels wide by 8 pixels tall
Characters Per Line	21 for SR 56/ 15 for CR 54
Lines of Text	3
Full Matrix LED Display	~~125~~ 150 pixels wide by 36 ~~27~~ pixels tall
Pixel Color	RGB; 32,000 colors
Pixel Pitch	~~46~~ 34 mm
LED Viewing Cone	30 degrees
Minimum Sign Intensity	12,400 cd/m^2
Enclosure Type	Front-Access
Support Structure Type	Cantilever

DMS and ADMS field elements with walk-in enclosures shall meet the requirements of FDOT Design Standards, Index Number 18300, “Dynamic Message Sign Walk-in”. All DMS and ADMS shall be capable of displaying 32,000 colors using red-green-blue (RGB) LEDs.

Florida Department of Transportation

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Intelligent Transportation Systems

(ITS)

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(MTR)

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I-75 (SR 93) From N. of SR 56 to N. of SR 54, Pasco County

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5.0	May 23, 2013	Anu Weerasuriya	Incorporated comments from FDOT Central Office
6.0	June 6, 2013	Wendy Ferjo	Revised Table of Contents
7.0	July 5, 2013	Wendy Ferjo	Added addendum items from ATC's, page 28, 29, 31
7.1	August 2, 2013	Wendy Ferjo	Added addendum items on page 30, Table 5
7.2	August 13, 2013	Anu Weerasuriya	Incorporated changes per responses to comments by D/B Firms

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Definitions, Acronyms, and Abbreviations

ACL	Access Control Lists
ADMS	Arterial Dynamic Message Sign
APL	Approved Product List
ASCII	American Standard Code for Information Interchange (a text file format)
ASIC	Application Specific Integrated Circuit
ATMS	Advanced Traffic Management System
ATS	Automatic Transfer Switch
bps	Bits per Second
C-2-C	Center to Center Communication
CB	Citizen's Band Radio
CADD	Computer Assisted Drafting and Design
CCEI	Consultant Construction Engineering and Inspection
CCTV	Closed-Circuit Television Camera
CEI	Construction Engineering and Inspection
CLD	Camera Lowering Device
CLI	Command Line Interface
CMS	Changeable Message Sign
CODEC	Coder/ Decoder
COMM	An abbreviation for "communication(s)"
COTS	Commercial Off-The-Shelf
CSMA/CD	Carrier Sense Multiple Access with Collision Detection
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DMS	Dynamic Message Sign
DVMRP	Distance Vector Multicast Routing Protocol
EAPOL	Extensible Authentication Protocol over LAN
EARP	Ethernet Address Resolution Protocol
ECMP	Equal-Cost Multipath
EIA	Electronics Industry Alliance
EIGRP	Enhanced Interior Gateway Routing Protocol
EMI	Electromagnetic Interface
ESD	Electrostatic Discharge
FAA	Federal Aviation Administration
FAT	Factory Acceptance Tests
FCC	Federal Communications Commission
FDOT	Florida Department of Transportation
FOC	Fiber Optic Cable/Cabling
FTP	File Transfer Protocol
GBIC	Gigabit Interface Converter
gbps	Giga (billion) bits per second
GIS	Geographic Information System
GPS	Global Positioning System

GUI	Graphical User Interface
HAR	Highway Advisory Radio
HDPE	High-Density Polyethylene
HVAC	Heating-ventilation-air-conditioning
I/O	Input/Output
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
ICMP	Internet Control Message Protocol
IGMP	Internet Group Management Protocol
IGRP	Interior Gateway Routing Protocol
IP	Internet Protocol
IPX	Internetwork Packet Exchange
ISO	International Organization for Standardization
ITIP	Intelligent Transportation Infrastructure Program
ITS	Intelligent Transportation Systems
ITS-FMT	ITS – Facilities Management Tool
LAN	Local Area Network
LAYER 2 SWITCHING	Ethernet switching performed at data link layer (MAC hardware addressing)
LAYER 3 SWITCHING	Ethernet switching performed at the network layer (logical addressing) providing internetwork routing at higher performance switching speeds
LED	Light Emitting Diodes
MAC	Media Access Control
MAN	Metropolitan Area Network
mbps	Mega (Million) bits per second
MD5	Message Digest 5
MFES	Managed Field Ethernet Switch
MIB	Management Information Base
MM.M	Mile Marker
MPH	Miles Per Hour
MSDP	Multicast Source Discovery Protocol
MTR	Minimum Technical Requirements
MUTCD	Manual on Uniform Traffic Control Devices
MVDS	Microwave Vehicle Detection System
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NITSA	National ITS Architecture
NTCIP	National Transportation Communications for ITS Protocol
NTP	Network Time Protocol
NTP	Notice To Proceed
OSHA	Occupational Safety and Health Administration
OSPF	Open Shortest Path First
OTDR	Optical Time-Domain Reflectometer

PCMCIA	Personal Computer Memory Card International Association
PDU	Power Distribution Unit
PIP-DM	Protocol-Independent Protocol Dense Mode
PIM-SM	Protocol-Independent Protocol Sparse Mode
PLC	Programmable Logic Circuit (or Controller)
P-ITSA	Project ITS Architecture
Project Requirements	Shall include all requirements per contract documents, including but not limited to, FDOT Standard Specification, MTR, RTVM, Manufacturer's specifications, Modified Special Provision, FDOT Plans Preparation Manual, and FDOT Design Standards.
P-SEMP	Project Systems Engineering Management Plan
PVST+ Per	VLAN Spanning Tree Plus
QoS	Quality-of-Service
QPL	Qualified Products List
RADIUS	Remote Authentication Dial-In User Service
RARD Reverse	Address Resolution Protocol
RFC 2544	Request for Comments 2544 (Benchmark Methodology for Network Interconnect Devices)
RFID	Radio Frequency Identification
RFP	Request for Proposal
RGB	Red-Green-Blue
RGS	Rigid Galvanized Steel
RIP	Routing Information Protocol
RMON	Remote Monitoring
RS232	Recommended Standard – 232 (a standard serial interface)
RSTP	Rapid Spanning Tree Protocol
RTMC	Regional Transportation Management Center
RTVM	Requirements Traceability Verification Matrix
RWIS	Roadway Weather Information System
SEMP	Systems Engineering Management Plan
SIDR	Standard inside dimension ratio
SMON	Switch Monitoring
SNMP	Simple Network Management Protocol
SNTP	Simple Network Time Protocol
SwRI	Southwest Research Institute
SQL	Structured Query Language
SSH	Secure Shell Protocol
STP	Spanning Tree Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TCP/UDP	Transmission Control Protocol/User Datagram Protocol
TERL	Traffic Engineering Research Laboratory
TFTP	Trivial File Transfer Protocol
TIM	Traffic Incident Management
TMC	Transportation Management Center

UDP	User Datagram Protocol
UL	Underwriters Laboratory
UPS	Uninterruptible Power Service
UTP	Unshielded Twisted Pair
VAC	Volts of Alternating Current
VDC	Volts of Direct Current
VDS	Vehicle Detection System (see MVDS)
VLAN	Virtual Local Area Network
VoIP	Voice Over Internet Protocol
VRRP	Virtual Redundancy Router Protocol

1. Introduction

This document defines and describes the minimum functional and technical requirements for designing, furnishing, constructing, integrating, and testing new Intelligent Transportation Systems (ITS) along I-75 from north of SR 56 to north of CR 54, Pasco County.

ITS work elements for Design-Build of I-75 from north of SR 56 to north of CR 54 in Pasco County (the Project) shall include, but not be limited to, the following:

- Development of the Project ITS Architecture (P-ITSA), Project Systems Engineering Management Plan (P-SEMP) and Requirements Traceability Verification Matrix (RTVM)
- ITS maintenance services
- ITS design services
- DMS field elements
- ADMS field elements
- CCTV field elements
- MVDS field elements
- HAR field elements
- RWIS field elements
- Electrical and ITS conduit and pull boxes
- Electrical power service for ITS field elements
- Lightning protection systems, including grounding systems and surge protective devices
- ITS FOC communication infrastructure
- ITS Ethernet network and network devices
- Wireless communication infrastructure and wireless Ethernet network
- Physical network diagram, including Layer 2 (device) and Layer 3 (backbone) diagrams
- ITS integration services
- ITS testing services
- ITS training services
- Restoration of ITS services
- ITS-FMT data entry sheets preparation
- As-built plans
- Warranties
- Grounding

2. Project Overview

The Project will provide ITS deployment along I-75 which includes CCTV, DMS, RWIS, MVDS, and

HAR from north of SR 56 to north of CR 54 as shown in Figure 1. The Project will also provide ADMS along SR 56 and CR 54 within the Project limits. The Project will provide backbone and local Ethernet network communication over the new FOC. The Project will enable continuous permanent ITS communication and ITS field element coverage of I-75 from the District Seven RTMC.

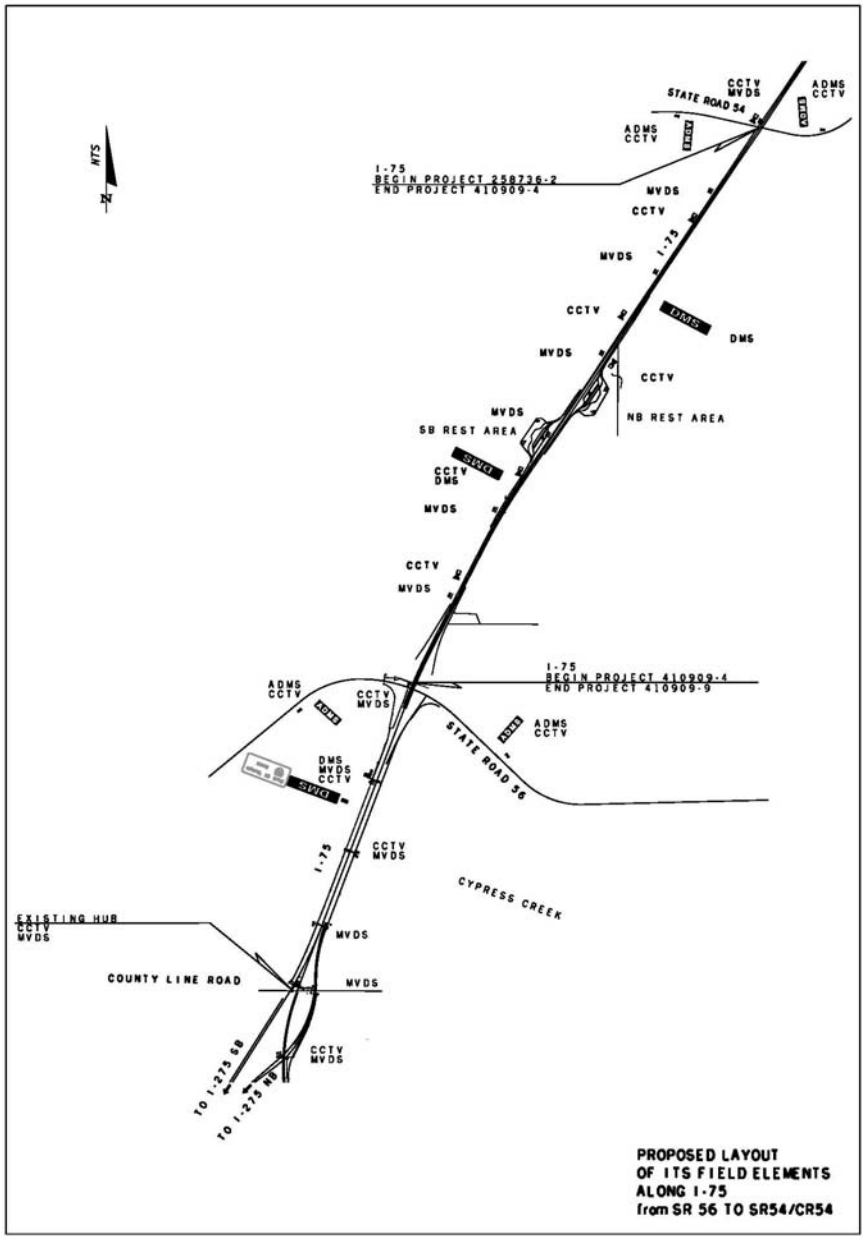

Figure 1: ITS Field Elements Concept Drawing

The Design-Build Firm shall also provide one 4 inch conduit with three 1 inch innerducts connecting NB and SB Rest Areas for future use. These conduits shall be connected to the new FOC backbone along I-75. The conduits shall end in new pull boxes within 5 feet of the NB and SB Rest Area buildings.

3. Existing Conditions

There are one existing ITIP traffic-monitoring sites within the Project limits that will require removal under this Project. Coordinate with the District Seven ITS Section for removal of these sites.

The Department has implemented several ITS projects in the vicinity of the Project. These include, but may not be limited, to:

- FPID 407233-7: I-275 from Bearss Avenue to I-275/I-75 Apex (Hillsborough County). This project provided FOC communication network and ITS field elements from Bearss Avenue to I-75 on I-275. A hub was installed under this project at County Line Road within I-275/I-75 interchange. The ITS field elements of this project are being integrated at this time.
- FPID 408459-3/410909-9 (goes with projects): I-75 from Bruce B. Downs Blvd. to SR 56 (Hillsborough/Pasco County). These two projects are still under construction and will be providing FOC communication network and ITS field elements for the entire length of the project.
- 258736-2-52-01: I-75 from north of CR 54 to north of SR 52 (Pasco County). This project is currently being advertised and bid and will be under construction soon. This project will be providing FOC communication network and ITS field elements for the entire length of the project.

3.1. ITS Field Elements

District Seven's ITS field elements consist of CCTV, DMS, ADMS, MVDS, HAR, RWIS, communication HUBs and ITS control cabinets. ITS cabinets contain equipment to support the ITS field elements connected to the cabinet, the infrastructure to connect to the FOC communication infrastructure, and the equipment to connect to the Ethernet network for communicating with the RTMC and the SunGuide^{TM} central system software.

3.2. Communication Infrastructure

District Seven's ITS communication infrastructure typically consists of a 72-count single-mode FOC communication backbone and 12-count single-mode FOC drops to ITS field elements at ITS cabinet locations. In order to minimize the number of ITS cabinets, some communication between ITS cabinets and ITS field elements uses wireless communication, and composite. The FOC and cable communication are placed in an underground conduit system typically consisting of a 4-inch HDPE conduit containing three 1 inch innerducts. Splice boxes are placed in the vicinity of ITS cabinets to facilitate the 12-count FOC drops. Fiber pull boxes are spaced to facilitate installation of the FOC and changes of direction of the conduit path.

Figure 2 provides a network block diagram showing how the I-75 Project fits into the existing ITS network infrastructure.

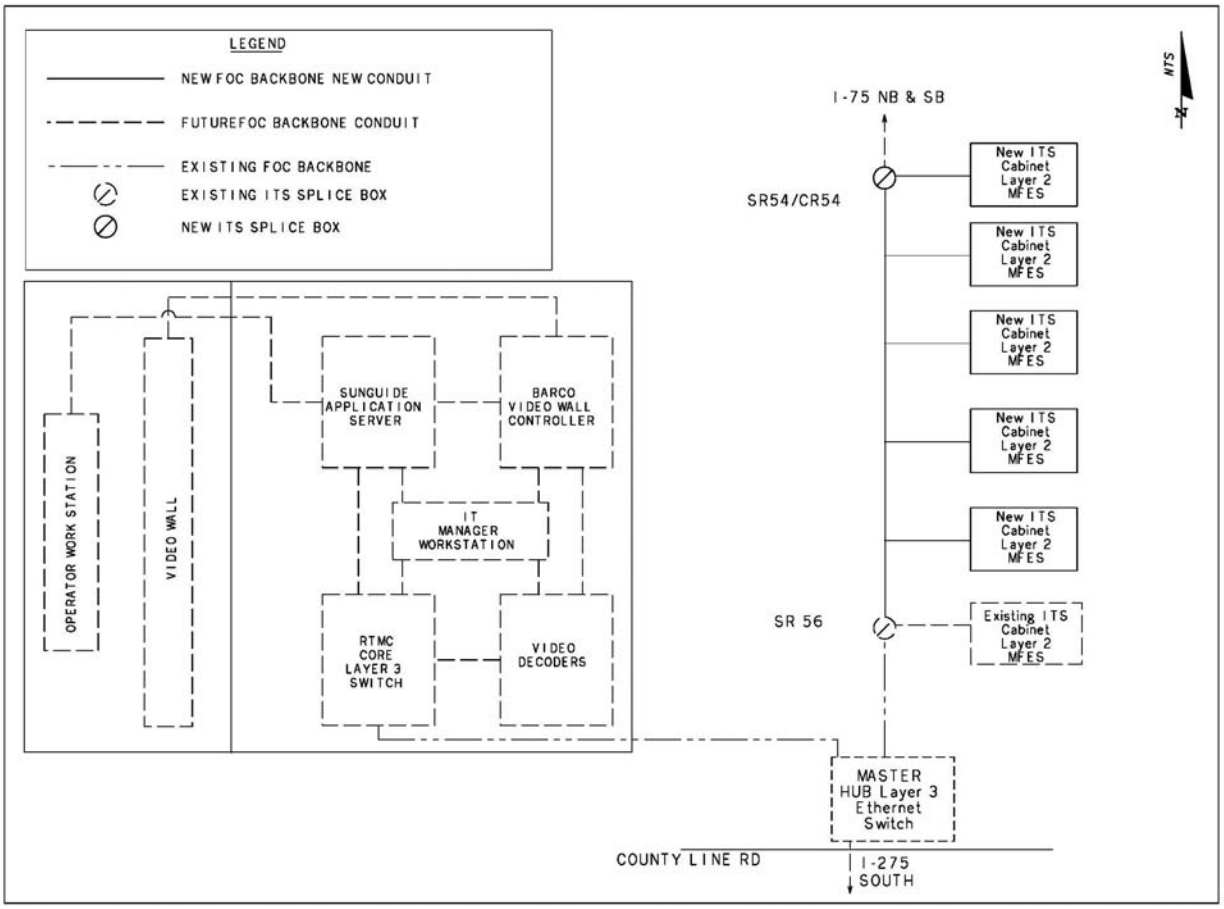

Figure 2: Existing/Proposed ITS Network Block Diagram

ITS cabinets are installed for CCTV, MVDS, RWIS, HAR, and DMS and installations can be for individual or multiple ITS field elements at the same or nearby location/s. ITS cabinets include network equipment, H.264 encoders, media converters, device servers, PDU, UPS, and batteries. The ITS cabinets have 100 mbps or 1 gbps MFES and a manual` disconnect for a portable generator. Some ITS poles have NEMA boxes installed to allow ITS maintenance staff to connect into and calibrate the MVDS when the associated cabinet type 332 or 336 is in an inaccessible location.

Various forms of conduit and splice/pull box locate systems have been installed primarily consisting of conduit warning tape, conduit route markers and tone wires. Supplementary electronic box markers are in all pull and splice boxes.

3.3. Ethernet/Internet Protocol (IP) Communication Network

Communication between local ITS cabinets and the hubs use TCP/IP over a 10/100 mbps or 1 gbps Ethernet Optical Network. From hub to hub, communication is accomplished using TCP/IP over a 1 or 10 gbps Ethernet Optical Network. District Seven limits the demand on the Ethernet segments and fiber pairs to 60% or less of the capacity supported by optical communication devices in use to maximize the quality of the signal. District Seven also limits the number of IP addresses on the hub to local devices to prevent Spanning Tree Protocol issues.

Within the 72-count FOC backbone, the District Seven has designated assignments for the six 12-count FOC buffer tubes, as follows:

Table 1: Existing Buffer Tube Color Assignments

Buffer Tube Color	District 7 Assignment
Blue	10 gbps Ethernet Backbone
Orange	100/1000 mbps Ethernet Field Device Groups
Green	100/1000 mbps ITS Expansion
Brown	Shared with local agencies and Center to Center Communication (C-2-C). Fibers 9-12 (45-48) are used for C-2-C
Slate	Shared with local agencies and Florida Turnpike Enterprise (FTE). Fibers 1-8 (49-56) shared with FTE
White	Future

3.4. Existing Hubs

Communication from hub to ITS field cabinets are at 10/100/1000 mbps using Layer 2 Ethernet Switches and communication from hub to RTMC is at 1 gbps Ethernet or 10 gbps using OSI Layer 3 Ethernet switches through FOC backbone. The hub ITS equipment shelters are secure, air conditioned and contain backup UPS and other equipment and hardware required to make them fully functional and to support operations and maintenance. Hubs have been equipped with commercial electrical service and permanent generators. The existing hub located at County Line Road within the I-75/I-275 Interchange shall be the designated hub for this Project.

3.5. Existing ITS Electrical Service

There is no existing electrical service within the Project limits that has been designed for the ITS field elements or cabinets. District Seven requires commercial electrical power for ITS field elements. Electrical service, including transformers, have been designed on a case-by-case basis to meet the electrical requirements of the ITS field elements and ITS cabinets and the length of the electrical cabling. Copper conductors for ITS electrical service are typically installed in underground conduit. District Seven electrical conductors are installed in a separate conduit from the ITS FOC. ITS electrical service pull and junction boxes have been equipped with additional locking devices to prevent unauthorized access and theft of copper cables

4. System Requirements

4.1. General

The Design-Build Firm shall deliver all subsystems/devices/components required in this MTR and shall determine the exact locations and quantities of the ITS field elements to meet the requirements of this MTR.

The Design-Build Firm shall ensure that all ITS field elements and ancillary components comply with the Contract documents, FDOT's Approved Product List (APL) / Qualified Products List (QPL), and are supported within the SunGuide^{TM} software, unless otherwise approved by the Department. The Design-

Build Firm shall provide a listing of APL approval numbers for all ITS field elements proposed for utilization on this Project in accordance with Section 603 of the Standard Specifications.

All ITS field elements and ancillary components shall be new commercial off-the-shelf (COTS) production products with the latest version of FDOT APL-certified hardware and software (at the time of installation). Neither untried nor prototype units shall be approved or accepted by the Department. The Design-Build Firm shall not use reconditioned equipment.

When electrical or communication conduits are proposed for bridge attachment, the Design-Build Firm shall work with the District Structure Maintenance Engineers to obtain approval of bridge attachments.

The Design-Build Firm shall perform site preparation and other site upgrades required for subsystem ITS field elements and ancillary components installations. Examples of these upgrades include, but are not limited to, ground leveling, concrete leveling pads, and/or addition of retaining walls. ITS field element installations shall meet all applicable clear zone requirements. Additional installation requirements that are subsystem specific are included in the subsystems and ITS field element requirements presented in the remainder of these MTR and specified in the FDOT Standard Specifications.

Regardless of how any requirements are presented, depicted, or formatted herein, the Design-Build Firm shall apply all requirements to each and every subsystem, ITS field elements, and ancillary component described, no matter its number or location, at all Project locations shown in Department-approved final signed and sealed plans, and shall conform to all Project requirements, applicable standards, manufacturer specifications, and these Contract documents.

4.1.1. FDOT Specifications

ITS field elements and communication infrastructure and network components shall, as a minimum, meet this Minimum Technical Requirements and Governing Regulations in Section V. A. of the RFP.

4.1.2. Industry Standards

The materials used by and workmanship completed by the Design-Build Firm shall meet or exceed industry standards. All materials, equipment, supplies, installations and testing shall comply with the Project requirements, the following standards, as applicable, and all other applicable standards and requirements. If multiple requirements or standards are specified for any single item or component of the Project, the most stringent requirement or standard shall govern.

The following list of standards and organizations that guide industry standards and best practices is not meant to be all inclusive:

- The American Society of Testing and Materials standards (ASTM)
- Institute of Electrical and Electronics Engineers (IEEE) standards
- International Standards Organization standards
- The American National Standards Institute (ANSI)
- The National Electrical Manufacturers Association (NEMA)
- The Underwriters' Laboratories Inc. (UL)
- The National Board of Fire Underwriters (NBFU)
- The National Fire Protection Association (NFPA)

- The Society of Automotive Engineers (SAE)
- The Electrical Testing Laboratories (ETL)
- Bellcore Technical Advisories and Technical Requirements
- The Electronic Industries Alliance (EIA)
- The National Electrical Code (NEC)
- The National Electrical Safety Code (NESC)
- The Joint Electronic Devices Engineering Council (JEDEC)
- The Radio-Electronics-Television Manufacturers Association (RETMA)
- The Lightning Protection Institute (LPI)
- The Rural Electrification Administration (REA)
- The International Radio Consultative Committee (CCIR)
- The International Telephone and Telegraph Consultative Committee (CCITT)
- The American Standard Code for Information Interchange (ASCII)
- The National Television Systems Committee (NTSC)
- The International Telecommunications Union (ITU)
- The Moving Picture Experts Group (MPEG)
- The Bureau of Radiological Health – Optical Radiation Hazard specifications
- The Telecommunications Industries Association (TIA)
- The American Association of State Highway & Transportation Officials (AASHTO)
- The Federal Aviation Administration (FAA)
- The Federal Communications Commission (FCC)

Refer to RFP for additional industry standards/governing regulations.

4.2. Design Phase

The Design-Build Firm, as a minimum, shall provide the following systems engineering documents:

1. P-ITSA
2. P-SEMP
3. RTVM

The above documents shall meet the requirements of the following

1. National ITS Architecture – Version 7.0
2. Florida Statewide ITS Architecture – Latest Update
3. Tampa Bay SunGuide^{TM} Regional ITS Architecture
4. FDOT Guidelines for the Implementation of Federal Highway Administration (FHWA) Rule 940 in Florida

5. FDOT Guidelines for Writing a Project Systems Engineering Management Plan
6. Florida's Statewide Systems Engineering Management Plan, Version 2
7. MTR as presented herein

FHWA Rule 940 requires that the systems engineering process shall include, at a minimum:

1. Identification of portions of the regional architecture being implemented
2. Identification of participating agencies' roles and responsibilities
3. Requirements definition
4. Analysis of alternative system configurations and technology options to meet requirements
5. Procurement options
6. Identification of applicable standards and testing procedures; and,
7. Procedures and resources necessary for operations and management of the system.

The Design-Build Firm shall comply with the Department's SEMP requirements and submit applicable P-ITSA and P-SEMP and RTVM documentation for the Department's review and approval.

The ITS section within the District Seven Traffic Operations Division is responsible for the development and operation of ITS programs. These programs increase the efficiency of existing freeway infrastructure through rapid detection and response to incidents, and collection and dissemination of traffic information to travelers.

To maximize the benefit of these programs, they must be planned, designed, deployed, operated and maintained using a very structured process that:

1. Defines and validates the problems to be solved;
2. Employs standards;
3. Supports configuration requirements; and,
4. Frequently verifies that the program is properly addressing the validated problems.

Further, a process that addresses the entire life cycle of the Project ensures that early phases of the Project position it well for deployment, operation and maintenance, and that operations and maintenance requirements and procedures are tied back to the original program requirements. This process is called the Systems Engineering Process.

This process shall focus on ensuring that:

1. Project goals are well-defined and validated
2. Project requirements are developed that tie to the Project goals
3. The Project is assessed against those requirements.

The Design-Build Firm shall develop a P-ITSA and a P-SEMP and submit them to the Department for review and approval within 60 calendar days of the written date of Notice to Proceed (NTP). The P-ITSA shall document the elements of the Tampa Bay SunGuide™ Regional ITS Architecture that are being implemented with the Project. The P-SEMP shall incorporate FDOT Standard Specifications, Supplemental Specifications, Modified Special Provisions, and requirements contained in this MTR that must be met for the Project. The Design-Build Firm shall adhere to and meet or exceed all requirements in the P-SEMP, including all applicable appendices, throughout the life of the Contract term.

The initial RTVM shall be submitted to the Department for review and approval no later than 30 calendar days after the approval of the P-SEMP. At a minimum, the P-SEMP and RTVM shall be reviewed every three months after the initial approval and updated, as needed. The updated and revised P-SEMP and RTVM documents shall be submitted to the Department for review and approval.

The Design-Build Firm shall design the ITS field elements to meet FDOT and applicable industry standards. In addition, the Design-Build Firm shall complete and submit the checklists in the District Seven ITS Design Guidelines Checklist included in the RFP package, or the latest version which can be obtained by contacting the FDOT Project Manager/ITS Operations Manager. The Design-Build Firm shall submit the applicable checklists with each design submittal.

The Design-Build Firm shall label each device location as follows: *device* I-75 MM.M MP *BB* where *device* can be a CCTV, MVDS, HAR, RWIS, generator, DMS, or ADMS; MM.M is the mile post rounded to tenth of a mile (example: 45.4); *BB* is the travel direction (example NB). For a single location with multiple devices, list all devices. In addition, latitude and longitude location shall be provided for the HAR locations to assist FDOT with Federal Communication Commission (FCC) requirements. Any documents, plans, maps, or calculations developed by the Design-Build Firm and submitted to the Department for this Contract shall use English units.

The engineering scale for the plan sheets shall be 1 inch = 100 feet. Blowups or insets shall be provided at each ITS field element and electrical power service point. Inset scale shall be 1 inch = 40 feet or other scale as needed to clearly depict the details of the installation, as approved by the Department.

The Design-Build Firm shall design the location of ITS field elements so that they are accessible for maintenance personnel and vehicles without lane closures. The Design-Build Firm shall not install any ITS devices (i.e., CCTV, MVDS, etc.) or cabinets within the median of I-75. The Design-Build Firm shall minimize conduit crossings of I-75 to minimize conflicts with future construction projects along I-75. In order to minimize median crossings, the Design-Build Firm may propose placing FOC backbone on both sides of I-75.

During the design phase, the Design-Build Firm shall submit documents and plans for review in accordance with RFP. Following, for information only, is a listing of the required submittals. It is the responsibility of the Design-Build Firm to comply with all the submittal requirements included within or referenced within the Contract documents whether listed below or not.

1. P-ITSA
2. P-SEMP
3. RTVM
4. FDOT Standard Specifications, Section 603 documentation
5. Physical network diagram
6. FOC splicing diagrams
7. Layer 2 (device) and Layer 3 (backbone) Ethernet network diagrams
8. IP addressing scheme
9. Completed design checklists
10. Electrical design calculation which shall include:
    A. Voltage drop calculation spread-sheet showing voltage drop and current for each link, transformer voltages.
    B. Electrical riser diagram

C. Electrical one line diagram

D. Conduit

E. Grounding details

11. Final Plans for electrical and fiber optic conduits (if proposed to expedite construction in advance of the entire ITS package, the conduit plans shall include approval of the electrical design document).
12. Video camera survey showing actual coverage of the proposed CCTV (see Section 4.5.2 for additional requirements). Each video clip file name shall match the CCTV name.
13. Plan for OSHA compliance when working around power lines
14. Soil survey results and geotechnical analysis
15. Structural design and plans
16. Plans and specifications for the Project
17. FOC transmission loss design report
18. HAR frequency and 4.9 GHz wireless network spectrum analysis
19. FCC permits and licenses
20. Federal Aviation Administration (FAA) permits
21. Wetland encroachment permits
22. Right of way easements
23. Evidence of railroad coordination
24. Evidence of utility coordination, including locating existing ITS FOC and electrical conduit

4.3. Construction Phase

The Design-Build Firm shall furnish, install, integrate, configure, and test all ITS infrastructure components, ITS field elements and network equipment necessary to make the Project operational and able to be fully integrated with the RTMC.

The Design-Build Firm shall schedule and coordinate ITS work to facilitate other components of the I-75 Design-Build Project described in the RFP, including, but not limited to, roadway realignment, roadway widening, signing, lighting, structures, retaining walls, and noise walls. Other projects are anticipated on or around I-75, including local agency projects, during the life of the Project. The Design-Build Firm shall review and apply the District Seven ITS Construction Checklists (included in the RFP package). The Design-Build Firm shall assist the Construction Engineering and Inspection (CEI) company to complete the checklists thoroughly and accurately.

The Design-Build Firm shall install the ITS field elements, subsystems and ancillary components that are detailed in the Department-approved final design plans and specifications including, but not limited to, all required structures and foundations. Any deviations from the final design plans shall be submitted for review and approval by the Department.

The Design-Build Firm shall provide at least five working day advance notice when FDOT representatives are needed for meetings and field reviews. For other construction meetings, the Design-Build Firm shall provide at least two weeks' notice to the applicable FDOT representatives, unless the CEI Senior Project Engineer approves a shorter notification period for specific topics.

The Design-Build Firm shall obtain all permits and licenses (including, but not limited to, equipment, software/firmware licenses and FCC HAR and 4.9 GHz radio licenses). All licenses shall be obtained in the name of the FDOT. The Design-Build Firm shall conduct all utility coordination necessary for the construction of the Project. The Design-Build Firm shall coordinate with the applicable agencies and resolve all conflicts and permitting and/or utility issues occurring during the Project.

The Design-Build Firm shall prepare and submit to the Engineer a comprehensive plan for meeting Occupational Safety and Health Administration (OSHA) criteria when working in the vicinity of overhead power lines.

The Design-Build Firm shall furnish all tools, equipment, materials, supplies, and manufactured hardware, and shall perform all operations and equipment integration necessary to provide a complete, fully operational communication network as specified in the Project Requirements.

The Design-Build Firm shall install all items in accordance with the manufacturer's specifications and instructions or as directed by the Department.

During the Construction phase, the Design-Build Firm shall submit the following for Department review and approval. The following, for information only, is a listing of the required submittals (see Section I Submittals in RFP for an additional list). It is the responsibility of the Design-Build Firm to comply with all the submittal requirements included within or referenced within the Contract documents whether listed below or not.

Prior to installation:

1. Updated RTVM
2. Testing schedule
3. OTDR results for FOC on reel prior to installation

After installation:

1. Grounding full fall-of-potential test reports
2. Test plans including testing equipment, setup, manpower, and conditions needed for testing
3. Test procedures
4. Test data format
5. OTDR results for FOC after installation and splicing

Prior to Integration:

1. Updated RTVM
2. Integration and network configuration plans
3. Integration and network configuration schedule
4. If different from resumes included in the technical proposal, names and resumes of persons who will perform integration, tests and document test results.
5. Equipment information per site:
    A. Name
    B. Model number

C. APL number
D. Serial number
E. IP Address
F. Technical support and warranty telephone numbers

6. Summary of the experience and qualifications of the instructional personnel

Prior to Final Acceptance:

1. Test results performed by any manufacturer, the Design-Build Firm, and/or the Department
2. CEI and FDOT maintenance signed off of final inspection
3. Evidence that previously failed equipment has been corrected and retested
4. Complete training course outline
5. Training materials
6. Operation and maintenance manuals
7. Training sessions and training videos, using DVD R+W, covering all portions of all training.

As-built documentation:

1. Warranty documentation
2. Completed ITS-FMT data entry sheets
3. All documentation required by Standard Specifications, Section 603
4. Copy and licenses of all diagnostic software and full documentation
5. Failure Report Logs in demonstration that error rates are within requirements set herein
6. Updated 603-7 forms for any equipment change after the original submittal
7. Spare replacement units
8. Updated P-SEMP
9. Updated RTVM to demonstrate that all units have been successfully reconfigured or updated

4.3.1. System Integration

The Design-Build Firm shall provide a detailed plan of action, which discusses the process for integrating the new devices into the existing SunGuide^{TM} software at the RTMC.

The Design-Build Firm shall design, construct, and integrate the Project such that all subsystem field elements, ITS field elements and ancillary components within the Project are integrated with the SunGuide^{TM} software and hardware at the RTMC. The Design-Build Firm shall ensure that the ITS field elements installed are 100% compatible with the ITS field elements installed during previous ITS Projects in District Seven.

The Design-Build Firm shall coordinate all integration activities with the Department prior to commencement of any integration activities. All integration within the RTMC shall be scheduled at times other than during the normal weekday peak traffic hours (7:00 am to 9:00 am, and 3:30 pm to 7:00 pm) or

as approved by the Department. The Design-Build Firm shall schedule and perform all field integration activities and coordinate all RTMC integration activities with the ITS Operations Manager. Remote VPN access shall not be provided to the Design-Build Firm to access the ITS network of the District.

The Design-Build Firm shall incorporate the as-built CADD plans for all existing and new underground utilities installed under this Project, including but not limited to, outside plant fiber subsystem, FOC, splices schematics, pull boxes, splice vaults, power service and cables, and underground conduit system, in an electronic format that shall be 100% compatible with Department's Geographic Information System (GIS) and ITS-FMT. The Design-Build Firm shall prepare ITS-FMT data entry worksheets for each ITS field installation as required by the Department.

4.3.2. Testing Requirements

The Design-Build Firm shall develop test plans, conduct tests, and provide test results that demonstrate compliance with the Project requirements. The Design-Build Firm shall submit test plans, and updated RTVM to the Department for review at least 60 calendar days in advance of the schedule testing date. If the Department rejects or requests modifications to a test plan, the Design-Build Firm shall update and submit a revised test plan to the Department for approval. The Design-Build Firm shall allow 14 calendar days for the Department's review of the revised test plan. No test shall be conducted until the Department has approved the test plan. Test plans shall be based on and include the following:

1. The P-ITSA
2. The P-SEMP
3. The Updated RTVM
4. A step-by-step outline of the test procedures and sequence to be followed demonstrating compliance with the Project requirements
5. A test set-up/configuration diagram showing what is being tested
6. A description of expected operation, output, and test results
7. An estimate of the test duration and proposed test schedule
8. A data form to be used to record all data and quantitative results obtained during the tests
9. A description of any special equipment, setup, manpower, or conditions required for the test
10. The number of test cases shall reflect the complexity of each subsystem, ITS field element or ancillary component and the content of test cases shall cover all functionalities claimed by the respective manufacturer
11. The Design-Build Firm shall submit a description of any special equipment, setup, manpower, or conditions required for each respective test
12. The Design-Build Firm is required to have the CEI present to witness testing and provide signature for approval.
13. Approval of the Engineer of Record

The Design-Build Firm shall conduct at a minimum the following test on all equipment.

1. Factory tests
2. Standalone tests
3. Subsystem tests

4. System test
5. Final acceptance test

When the detailed RTVM is approved, the Design-Build Firm shall submit a testing schedule to the Department in accordance with the requirements of this MTR, perform the tests, document the results, and supply all necessary test equipment.

The Design-Build Firm shall furnish and maintain all required test equipment along with their services. All test equipment utilized shall have up-to-date calibration certification in accordance with the manufacturer's recommendations. The test equipment shall be made ready for use by the Design-Build Firm and/or the CEI at the time it is needed.

The Design-Build Firm shall notify the Department of the time, date and place of each test at least 21 calendar days prior to the date the test is planned.

The tests shall be conducted in the presence of the CEI and EOR, unless otherwise approved in writing by the Department. The Department reserves the right to waive the right to witness certain tests.

If any subsystem, ITS field element, or ancillary component fails any part of any test, the entire test shall be repeated at the discretion of the Department.

Neither witnessing of the tests by the Department, nor the waiving of the right to do so, shall relieve the Design-Build Firm of the responsibility to comply with the Project Requirements.

The Design-Build Firm shall submit in writing all test results performed by the manufacturer, and the Design-Build Firm within 14 calendar days of the documented respective test date for review and approval by the Department.

Failure of any subsystem, ITS field element or ancillary component to pass any test shall be counted as failed and non-compliant, and shall be replaced or repaired as needed until it passes the failed test. Replacement, repair, and retest of failed subsystem, ITS field element, or ancillary component shall be at no additional cost to the Department. The Design-Build Firm shall not be granted time extensions for replacement, repair, and retest, even if the manufacturer or other cause beyond the Design-Build Firm's control caused the failure.

All testing, test documents, test equipment, and associated work and materials shall be at no additional cost to the Department.

4.3.2.1. Factory Acceptance Tests

The Design-Build Firm shall work with equipment manufacturers to conduct the Factory Acceptance Tests (FAT) and document FAT results in accordance with FDOT Standard Specifications and this MTR. The Design-Build Firm is not required to perform FAT for ITS devices and equipment on the FDOT-APL.

4.3.2.2. Stand-Alone Tests

The Design-Build Firm shall perform Stand-Alone Tests to demonstrate that all subsystem field elements and components meet the relevant sections of FDOT Standard Specifications and this MTR. The Stand-Alone Tests shall be performed on each ITS field element and component prior to connection of the field element to the communication subsystem.

The Design-Build Firm's Stand-Alone Tests Plans shall verify the following items, as a minimum:

1. Verify that physical construction has been completed as per the requirements detailed herein, within the plan set, and as per Project requirements
2. Verify quality and tightness of ground and surge protector connections and that surge suppression complies with Standard Specifications, Section 785.-
3. Verify power supply voltages and outputs
4. Verify grounding meets the requirements of Standard Specifications Section 785 including performing the full fall-of-potential method for grounding tests required by Standard Specifications Section 785. Full fall-of-potential tests shall include a minimum of 10 test points spaced evenly from the ITS field element to the farthest grounding electrode from the ITS field element
5. Verify ITS field element are properly connected to the power source and grounding
6. Verify installation of specified cables and connections between the MFES and the ITS field element
7. Verify configuration of Internet protocol (IP) address and sub-network mask
8. Verify presence and quality of ITS field element data and/or image output
9. Verify interconnection of the ITS field element with the Access Network's assigned FOC and verify that there is a green transmission LED illuminated
10. Perform a "ping" to verify connection of ITS field element

If any ITS field element or ancillary component fails to pass its Stand-Alone Test more than twice, it shall be replaced by the Design-Build Firm with a new ITS field element or ancillary component of same make and model, and the entire Stand-Alone Test shall be repeated until proven successful.

The Stand-Alone Tests shall be performed on each and every ITS field element and ancillary component, including, but not limited to, the following:

1. CCTV Cameras
2. Camera Lowering Devices
3. MVDS
4. DMS/ADMS
5. HAR
6. RWIS
7. Device Controllers
8. Video Encoders (H.264)
9. Wireless communication repeaters and access points
10. MFES
11. FOC, all fibers, including splices, jumper cables and connectors
12. Patch Panels
13. PDU
14. Generator Assemblies

15. Manual Transfer Switches
16. UPS Assemblies
17. Generator

4.3.2.3. Subsystem Tests

The Design-Build Firm shall perform Subsystem Tests to demonstrate that all subsystem field elements and components meet the relevant sections of FDOT Standard Specifications~~, Sections 780 through 786~~ and this MTR. No Subsystem Tests shall be performed without a Department-approved Subsystem Test Plan. The Subsystem Test may begin when the Design-Build Firm has satisfied the Department that all work on the subsystem has been completed.

The Subsystem Test shall be performed utilizing the Project field equipment and communication system. The Design-Build Firm shall provide qualified personnel to support the diagnosis and repair of system equipment during the Subsystem Test as required.

Subsystem Tests shall be conducted for:

- Communication
- CCTV
- MVDS
- DMS and ADMS
- HAR
- RWIS
- Power

Each Subsystem Test shall consist of 2 parts:

- Part 1: Test the subsystem communication with the RTMC over the Layer 2/Layer 3 Ethernet network using the manufacturer's proprietary software. Part 1 shall demonstrate all installed ITS field elements and ancillary components meet the Project Requirements.
- Part 2: After integration of the subsystem with the SunGuide™ central system software, the Design-Build Firm shall demonstrate full control of all ITS field elements associated with the subsystem within the Project limits from the RTMC utilizing SunGuide™ software. The Design-Build Firm shall also demonstrate that the functionalities of the local/remote trouble shooting/diagnostics perform as specified in the specific subsystem functional requirements.

In the event a subsystem fails the Subsystem Test and is rejected by the Department, the Design-Build Firm shall correct the problem. The Design-Build Firm shall repeat the Subystem Test within 7 days after receiving the approval from the Department that a retest can be conducted.

4.3.2.4. System Test

The Design-Build Firm shall conduct the System Test covering all Project subsystems integrated with SunGuide™ software and operable from the RTMC, operating continuously for a period of 30 consecutive calendar-days without failure of any subsystem, ITS field element, or ancillary component.

The Design-Build Firm shall notify the Department in writing 14 calendar-days before the scheduled

commencement of the System Test. The System Test shall not be performed without prior written approval from the ITS Operations Manager.

In the event that a subsystem, ITS field element, or ancillary component failure is identified by the Department or the Design-Build Firm, the System Test shall be shut down (System Test Shutdown).

The Design-Build Firm shall diagnose and correct all deficiencies causing the System Test Shutdown. After the deficiency or deficiencies causing the System Test Shutdown has been corrected, the Design-Build Firm shall perform all applicable Stand-Alone and Subsystem Tests. Once the Stand-Alone and Subsystem Tests have passed, the Design-Build Firm shall request approval to restart the System Test. If approved by the ITS Operations Manager, the System Test shall be restarted at day zero for a new 30 consecutive calendar day test period unless corrections are made within the requirements of Table 2: Allowable Outage Times. If the allowable times in Table 2 have been met, then the System Test Shutdown shall be reclassified as a System Test Suspension and the System Test shall recommence at the point it was stopped upon approval of the ITS Operations Manager.

When the total number of System Test Shutdowns is 3 for to the same subsystem, ITS field element, or ancillary component, the Design-Build Firm shall,

1. Remove and replace the subsystem, ITS field element or ancillary component with a new and unused unit as per the requirements of this MTR
2. Perform again all applicable Stand-Alone and Subsystem Tests, as deemed necessary by the Department
3. Upon written approval from the ITS Operations Manager, restart the System Test for a new 30 consecutive calendar day period.

The System Test steps described herein shall be repeated as many times as deemed necessary by the Department to satisfy the requirements of this MTR.

If the Design-Build Firm is unable to determine whether the cause of a problem is hardware or software related, the 30 calendar-day System Test shall be allowed to restart from day zero, unless otherwise directed by the Department. However, the System Test shall not be deemed to have been successfully completed until the problem has been corrected.

All software required for diagnosing malfunctions of hardware and software/firmware shall be supplied by the Design-Build Firm and approved by the Department. A copy of all diagnostic software shall be submitted to the Department with full documentation. The Design-Build Firm shall submit diagnostic reports to demonstrate that errors were detected and corrected.

The System Test shall be repeated as many times as deemed necessary by the Department to satisfy the requirements of Project Requirements.

The Design-Build Firm shall maintain a daily log for all operations after the start of the System Test. Any and all replacement parts, hours, and a brief description of what was corrected shall be reported in the log. The Design-Build Firm shall submit to the Department the required documentation to prove that all subsystems, ITS field elements and ancillary components have been successfully integrated and configured.

The System Test shall be performed with the RTMC Operators managing, monitoring, and controlling the ITS field elements in real-time to assure conformance of the Project Requirements, and Section 611, Acceptance Procedures, of the FDOT Standard Specifications for Road and Bridge Construction.

Table 2: Allowable Outage Times

Item	Allowable Times
Communication Subsystem	8 hours
CCTV Subsystem	12 hours
MVDS Subsystem	48 hours
DMS/ADMS Subsystems	48 hours
HAR Subsystem	48 hours
RWIS Subsystem	48 hours
Power Subsystem	8 hours

4.4. Post Construction Phase

The Design-Build Firm shall provide post construction services including, but not limited to:

1. Development of As-Built Plans in standard FDOT Computer Assisted Drafting and Design (CADD) formats
2. The Design-Build Firm shall fill out the ITS Facility Management data entry forms (see RFP Attachments) for the entire ITS infrastructure, field elements, pull boxes, and splice boxes. GPS coordinates required for the ITS FM form shall meet the following accuracy and format requirements
    a. Survey accuracy for DMS vertical clearance dimensions
    b. GPS coordinates in decimal degree format

    When specifying GPS coordinates, single datum shall be utilized for all measurements and the datum used shall be noted in the forms.
3. Completion of the RTVM document demonstrating all Project Requirements and other applicable documents were satisfied. The final RTVM document shall be signed and dated by the Design-Build Firm's ITS Engineer(s) of Record and by the CEI's Senior Project Engineer

During Maintenance Phase

1. ITS Maintenance and Repair Plan
2. Written documentation that all personnel involved in the maintenance/repair of the ITS have had previous experience.
3. Names and resumes for personnel who will maintain and repair ITS infrastructure and field elements.

4.4.1. 90-Day Warranty

The Design-Build Firm shall clearly identify, in writing, its designated contact person and alternate responsible for equipment support and equipment warranty. The support shall cover maintenance and any defects in materials and workmanship for all system components, as well as replacement at no additional charge during the support period for labor, equipment, system components, and other materials.

The warranty shall provide that, in the event of a malfunction during the 90-day warranty period, any defective ITS field element or ancillary component shall be repaired or replaced with a new ITS field element or ancillary component of same make and model, including surge suppression devices, within the

requirements of Table 2: Allowable Outage Times.

The Design-Build Firm shall be responsible for all labor equipment and costs for removing any deficient or defective ITS field element or ancillary component and installing the new ITS field elements or ancillary components under these warranty provisions.

Any ITS field element or ancillary component that, in the opinion of the Department, fails 3 times prior to the expiration of the warranty shall be judged as unsuitable and shall be replaced by the Design-Build Firm with a new ITS field element or ancillary component of the same make and model at no cost to the Department.

The unsuitable ITS field element or ancillary component shall be permanently removed from the Project by the Design-Build Firm.

Upon receipt of a notification from the Department, the Design-Build Firm shall respond and complete repairs or replacement of the deficiencies or defects within the allowable times contained in Table 2: Allowable Outage Times. If the Design-Build Firm is unable or unwilling to respond and complete repairs or replacement of the deficiencies or defects within allowable times, then the Department may perform the repairs or replacement of the deficiencies or defects and submit a claim to the Design-Build Firm.

4.4.2. Training

The Design-Build Firm or its designee shall conduct training for all Project subsystems and ITS field elements and shall accommodate up to 20 people at the RTMC or other location approved by the ITS Operations Manager. All training shall be conducted prior to the Final Acceptance.

The total hours of training conducted shall be a minimum of 8 hours and a maximum of 16 hours for each of the subsystems, per each training session. Training shall be designed to familiarize the Department and/or its designees with the design, operation and maintenance of the subsystems furnished under this Contract. The training shall cover functionality, theory of operation, installation, calibration, operation, testing, maintenance, trouble-shooting, repair, and performance and operating parameters.

At least 4 hours of each training class shall be devoted to details of ITS field element placement, numbering and naming conventions, and any other information that shall assist the operations and maintenance personnel to become familiar with the ITS field elements.

Training shall be provided by personnel thoroughly familiar with the technology, operation and maintenance of all equipment installed on the Project. This shall be the combination of the Design-Build Firm’s personnel and equipment manufacturer's representatives. The Design-Build Firm’s personnel shall provide a single cohesive training session for the entire system as a unit in addition to specific ITS field element/subsystem training provided by the device vendor / manufacturer. A complete course outline and summary of the experience and qualifications of the instructional personnel shall be submitted to the Department for approval prior to the start of training. The instructional personnel shall have both technical ability and communication skills to convey the information to the attendees and to respond to technical and procedural questions. Training sessions may be combined and/or shortened with the agreement of Department and the Design-Build Firm.

The Design-Build Firm or its designee shall provide the training materials. These materials shall include, as a minimum, a course outline, a Microsoft Office PowerPoint presentation showing detailed subject material to be covered during training, operation and maintenance manuals, test equipment and tools and any other needed information.

The Design-Build Firm shall video record, using DVD R+W, all portions of all training, including Maintenance Personnel Training. All DVD recordings shall become the property of the Department at the end of each course given, with 1 copy of each DVD recording provided to the District.

If, at any time during a training course, the Department determines that the course is not being presented in an effective manner, the training for the course shall be suspended. The Design-Build Firm shall make the necessary changes to the course, resubmit the required training materials to the Department for approval, and reschedule the training course.

4.4.2.1 Maintenance Personnel Training
The Design-Build Firm shall provide training for maintenance personnel. This training shall consist of two separate and identical courses of 16 hours. Each course shall have classroom and system demonstration hours, as appropriate, to properly instruct the participants. These courses shall be conducted as follows:

- Part I - 16 hours: The objective of Part I is to provide operational description, routine preventative maintenance requirements and procedures, trouble-shooting procedures, recommendations for test equipment, test equipment use, repair procedures, design data and drawings for communications equipment as part of this Project. This training shall be provided prior to Final Acceptance.
- Part II – 16 hours: The objective of Part II is to provide a hands-on training lab for designated maintenance personnel. These training sessions shall provide the opportunity to apply the theory presented in Part I. Part II shall also be provided prior to Final Acceptance.

Training shall be conducted at a Department-approved location prior to the Final Acceptance. The training shall, when possible, make use of and be centered around test equipment approved for use and to be turned over to the Department. If different equipment is required to conduct the training, the Design-Build Firm shall supply the equipment during the class period and the equipment shall be turned over to the Department following the approved training. Class size for each of the two courses shall be limited to 10 persons to afford maximum individual experience

4.4.3. Spare Replaceable Units

The Design-Build Firm shall provide to the Department, at a minimum, the number of new spare replaceable units for all ITS field elements and ancillary components supplied as part of the Project as shown in the Table 3: Project Spare Components below, rounded up to a whole number for quantities that are expressed in percentages. The Design-Build Firm shall also provide a quantity of 10% spare replaceable units rounded to the next higher whole number for consumable items not included in Table 3 for each subsystem.

Table 3: Project Spare Components

Spare Part Description	Quantities
Splice Vaults	1
Pull Boxes	2
Splice Enclosures	1
Above ground cable route markers	10%
Buried cable warning tape	500 ft
Conduit locate tone wire	1,000 ft
Electronic conduit marker systems	10 transmitters 2 receivers

Spare Part Description	Quantities
MFES	2
Cat5E Patch Cables	20%
Fiber Patch Cables	20%
Device Servers	10%
Pull Boxes - electrical	1
PDU	10%
Transformers (by rating)	1 for each rating
UPS Assemblies and Batteries	10%
Electronic Box Markers	10
CCTV Cameras	2
Camera Lowering Devices	1
Lowering Cranks	1
Cabinets for CCTV Sites	1
Digital Video Encoders	2
Media Converters	2
CCTV Local Interface Control Units	2
Fiber Modem	2
Cabinets for DMS/ADMS Sites	1/1
HAR Controller	1
HAR Transmitter	1
HAR Power Supply	1
HAR Antenna	1
HAR Cabinet	1
HAR Beacon assemblies	1
HAR Beacon cabinets	1
RWIS Controller	1
RWIS sensors (each type)	1
RWIS Power Supply	1
RWIS Cabinet	1
RWIS Poles	1
Side-Fire MVDS assemblies	10%
NEMA Enclosures for MVDS Sites	2

Additionally, DMS/ADMS spare parts shall be provided per FDOT Specification Section 781-3.7 Operational Support Supplies.

The cost for each spare replaceable unit shall be included in the cost of the Project and no separate payment shall be allowed.

Prior to delivery of spare replacement parts, the Design-Build Firm shall submit a list and samples of all spare replaceable units to the Department for review and approval. The Department shall have 21 calendar days to approve the list of spare replacement parts after submission of the list and final sample.

After receiving Department approval of the spare parts list, the Design-Build Firm shall deliver the spare replaceable units to the District or other location approved by the Department prior to Final Acceptance. The Department shall have 21 calendar days to review and/or test the delivered spare replacement parts.

The Design-Build Firm shall replace any spare replacement parts found to be defective by the Department within 30 calendar days of receipt of the notification from the Department.

4.5. Material/Equipment/Subsystem Requirements

4.5.1. Communication Subsystem

For purposes of this MTR, the term "connectivity" refers to the physical connection between the ITS field devices and the Layer 2 Ethernet switches in the ITS cabinets. The term "interconnectivity" refers to the connection between any two adjacent hubs and the RTMC. The Design-Build Firm shall provide full connectivity for ITS field elements installed with the Project.

The Design-Build Firm shall provide a communication subsystem that is an open-architecture, non-proprietary, real-time multimedia communication network, which is fault-tolerant.

The Design-Build Firm shall design a hierarchical network design, which includes the following layers:

- The interconnectivity layer: comprised of the Layer 3 Ethernet switches in the RTMC and hubs. The Department will perform configuration of these Layer 3 Ethernet switches.
- The connectivity layer: the local-access layer that connects ITS field devices, Layer 2 Ethernet switches, and all necessary encoders, media converters and device servers in the ITS cabinets.
- The FOC physical layer: the physical media that connects the Layer 2 and Layer 3 Ethernet switches.

The Design-Build Firm shall furnish and install new conduits and 72-count FOC along I-75 from the beginning of the Project at north of SR 56 to north of CR 54. The Design-Build Firm shall connect the proposed FOC backbone to the existing FOC backbone that terminates in splice vault at the CCTV camera located at NW corner of I-75/SR 56 interchange.

The Design-Build Firm shall integrate the I-75 ITS field elements into the hub located at County Line Road without disrupting existing hub functions and ITS field elements south of this Project. The Design-Build Firm shall expand the existing three network rings as shown in Figure 1, Network Architecture. New ITS cabinets and ITS field elements shall be integrated into this network. The Design-Build Firm shall develop and deploy new connectivity layer 1 gbps Layer 2 MFES in all new ITS cabinets.

The Design-Build Firm shall implement the RSTP for ITS field elements managed by District Seven at the FOC physical and connectivity layer networks.

The Design-Build Firm shall design and implement a "leap-frog" network architecture such that no adjacent ITS field elements of the same fiber pair ring as shown in Figure 3.

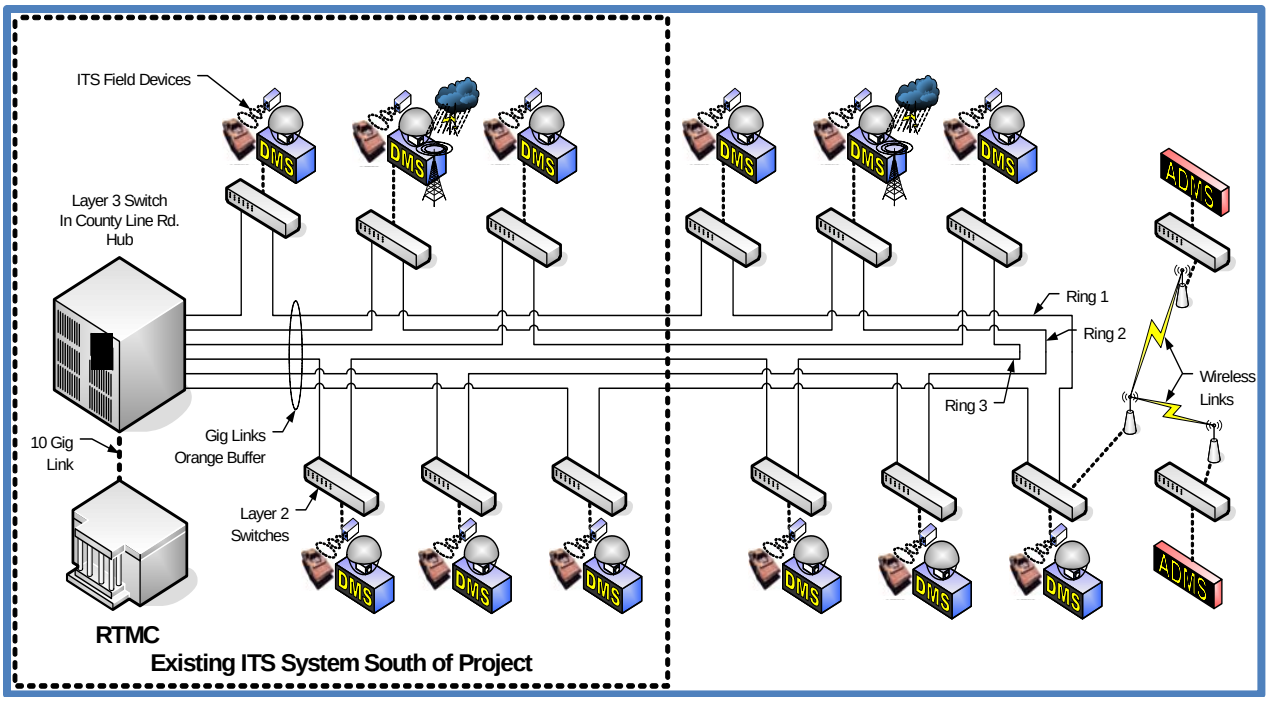

Figure 3: Network Architecture

The Design-Build Firm shall work closely with the District to confirm the preferred network architecture. The final network architecture, along with the associated FOC splicing diagrams, shall be included with the 90% plans for review and approval by the Department.

4.5.1.1. IP Addressing Scheme

The Design-Build Firm shall utilize the FDOT Standard IP Addressing Scheme to create a Project-specific list for all new/existing ITS field elements that are installed as part of the Project.

The Department will provide the Design-Build Firm with as many multicast IP addresses required for the CCTV video streams and the remaining needs. The IP address file will be provided in Excel spreadsheet format.

The Design-Build Firm shall be required to submit an Excel spreadsheet document listing all IP addresses utilized in the Project in a format easily understood depicting, at a minimum, the following information:

1. Page Number (from Plans)
2. Mile Marker
3. GPS coordinates
4. Device Type
5. IP Address

The Design-Build Firm shall not use any IP addressing scheme or IP addresses other than those provided by the Department. The Department shall review and approve the Design-Build Firm's IP addressing scheme submittal prior to the Design-Build Firm's implementation of the scheme.

The Design-Build Firm shall design and deploy multiple virtual local area networks (VLANs) to segment ITS field elements into logical workgroups. The Design-Build Firm shall ensure that the new ITS field elements are configured in new sets of VLANs. The design of VLANs shall take into consideration the optical network requirements described elsewhere in these MTR.

4.5.1.2. Digital Video Encoders

Digital video encoders shall meet the requirements of FDOT Standard Specifications, Section 784 – INTELLIGENT TRANSPORTATION SYSTEMS – NETWORK DEVICES.

The Design-Build Firm shall furnish, install and integrate digital video encoders in all new ITS cabinets where new CCTV subsystems are being installed. Digital Video Encoders shall meet H.264 standards and be compatible with existing RTMC video encoding.

4.5.1.3. Fiber Optic Cable

FOC shall meet the requirements of FDOT Standard Specifications.

The Design-Build Firm shall provide a 72-count single-mode FOC backbone. While connecting the proposed FOC backbone to the existing FOC backbone, the Design-Build Firm shall fusion (butt) splice new 72-count FOC to the existing 72-count FOC only in ITS splice boxes used for FOC drops to ITS cabinets. Reel-to-reel splicing shall be a minimum of 10,000 feet apart and shall be located at proposed 12-count FOC drop locations. The Design-Build Firm shall furnish any needed fiber splice enclosures and splice panels.

The Design-Build Firm shall test new FOC using OTDR equipment in accordance with the requirements in Standard Specifications, Section 783. The OTDR testing shall be conducted on the new 72-count FOC prior to installation (reel test) and post installation after the cable is terminated.

The Design-Build Firm shall provide 12-count single-mode FOC drops from the 72-count FOC backbone to ITS cabinets, unless 24-count single-mode FOC is required due to the number of ITS field elements at a site and the District's network architecture, in which case, a 24-count single-mode FOC drop shall be provided.

In no case shall the Design-Build Firm install FOC in the same conduit, pull box or splice box as electrical cables.

4.5.1.4. FO Conduit and Locate System

The fiber optic conduit and locate system shall meet the requirements of FDOT Standard Specifications.

The Design-Build Firm shall provide an ITS communication conduit system consisting of the following:

1. Three 1-inch SIDR Schedule 40 inner ducts in a 4-inch SIDR Schedule 40 outer duct. The inner ducts shall be colored orange, gray and green. The 72-count FOC backbone shall be placed in the orange inner duct. The other two inner ducts shall be spares.
2. Two 2-inch SIDR Schedule 40 orange color conduits at FOC drops to ITS cabinets. One conduit shall be a spare.

The Design-Build Firm shall install directional bores perpendicular to the roadway when crossing an

interchange ramp or crossroad or other roadway. Where multiple conduits are required, the directional bore shall place all conduits into a single outer conduit appropriately sized to contain the required number and sizes of conduit.

The Design-Build Firm shall locate conduit and pull boxes for ITS FOC backbone within 10 feet from the existing right-of-way line wherever feasible. Any deviation from the 10 feet requirement shall be approved by the Department. The 10-foot requirement may be adjusted as necessary to coordinate with and avoid conflicts as follows.

1. Existing field conditions, such as when required to traverse interchanges, ramps and crossroads
2. I-75 walled sections
3. Planned future I-75 construction improvements such as managed lanes
4. Existing drainage facilities

The Design-Build Firm shall clearly show conduit locations on the 60% ITS plans. The Design-Build Firm shall highlight areas where conduit is located outside the 10-foot zone and state the reason why this non-typical location is necessary. The Department will review exceptions to the conduit placement requirement and notify the Design-Build Firm if any of the exceptions are not acceptable. The Design-Build Firm shall work closely with the Department to resolve any conduit location questions. The Design-Build Firm shall make any necessary conduit location changes to the ITS plans at no additional cost to the Department.

For all underground conduits, the Design-Build Firm shall furnish and install conduit locate systems consisting of warning tape, route markers, and electronic route markers at splice box locations as described in Standard Specifications, Section 783.

4.5.1.5. ITS Pull/Splice Boxes and Locate System

ITS pull/splice boxes shall meet the requirements of FDOT Standard Specifications.

All pull boxes shall be installed below grade. All pull boxes shall have concrete mowing aprons around them and shall meet all the requirements of Standards Index, Numbers 17500, 18202 and 18204 for reinforcement spacing and slab dimensions.

The Design-Build Firm shall furnish and install ITS splice boxes and all necessary splicing hardware at points where the FOC drops to ITS cabinets are to be installed. A Locate Wire Grounding Unit and a 20 feet, 5/8 inch diameter copper clad grounding rod shall be furnished and installed in each splice box.

The Design-Build Firm shall use conduit coupling in lieu of pull boxes at the begin and end points of directional drilling unless the change in direction of the conduit is greater than 10 degrees.

The Design-Build Firm shall furnish and install electronic box markers, as described in Standard Specifications, in all new ITS pull boxes and all existing pull boxes that are to remain in service within the Project limits. In addition, the Design-Build Firm shall provide 2 electronic box marker receivers. The radio frequency of the electronic box marker receivers shall be the same as existing electronic box marker receivers used by District Seven. The Design-Build Firm shall coordinate with the ITS Operations Manager to obtain the existing radio frequency.

4.5.1.6. Managed Field-Hardened Ethernet Switches (MFES)

Managed field-hardened Ethernet switches shall meet the requirements of FDOT Standard Specifications, Section 784 INTELLIGENT TRANSPORTATION SYSTEMS – NETWORK DEVICES, or the following minimum technical requirements, depending upon which is more stringent.

The Design-Build Firm shall furnish and install new 1 gbps Layer 2 MFES in all new ITS cabinets.

The Design-Build Firm shall ensure the MFES has a minimum of 14 ports as described below:

1. Each MFES shall meet the following requirements:
    A. Have a minimum of 2 optical 1 gbps Ethernet ports. Each optical port shall consist of a pair of fibers, 1 fiber shall transmit (TX) data and 1 fiber shall receive (RX) data.
    B. The optical ports shall have the ability to TX and RX Ethernet data at a minimum distance of 25 kilometers with an RX sensitivity of -26 decibels per milliwatt (dBm) and a loss budget of 19 dBm.
2. Each MFES shall have a minimum of twelve (12) copper ports.

The Design-Build Firm shall ensure that the configurations of the MFES are able to be downloaded and stored on a PC and later shall be able to be uploaded to the unit when necessary.

The Design-Build Firm shall ensure that the configuration of the MFES meets or exceeds the following minimum trouble shooting and diagnostic specifications:

1. Displaying the contents of a specified address
2. Displaying information about hardware registers for a specified port
3. Displaying configuration and status of physical and logical ports
4. Displaying detailed information about Spanning Tree (configuration and status)
5. Displaying active status of the unit

The Design-Build Firm shall ensure that each MFES supports, at a minimum, the following security features:

1. Passwords – Multi-level user passwords secure switch against unauthorized configuration;
2. SSH / SSL – Extends capability of password protection to add encryption of passwords and data as they cross the network;
3. Enable /Disable Ports – Capability to disable ports so that traffic cannot pass;
4. 802.1q VLAN – Provides the ability to logically segregate traffic between predefined ports on switches;
5. MAC Based Port Security – The ability to secure ports on a switch so only specific ITS field elements / MAC addresses can communicate through that port;
6. 802.1x Port Based Network Access Control – The ability to lock down ports on a switch so that only authorized clients can communicate via that port;
7. RADIUS – Provides centralized password management; and,
8. SNMPv3 – Encrypted authentication and access security.

4.5.1.7. Device Servers

Device servers shall meet the requirements of FDOT Standard Specifications, Section 784 – INTELLIGENT TRANSPORTATION SYSTEMS – NETWORK DEVICES.

The Design-Build Firm shall furnish and install new device servers in all new ITS cabinets as required for the ITS field elements associated with the ITS cabinet.

4.5.2. CCTV

Closed-circuit television camera (CCTV) Subsystems shall meet the requirements of FDOT Standard Specifications, Section 782 – INTELLIGENT TRANSPORTATION SYSTEMS – VIDEO EQUIPMENT.

New CCTV poles and lowering devices shall meet the requirements of FDOT Standard Specifications, Section 785 – INTELLIGENT TRANSPORTATION SYSTEMS – INFRASTRUCTURE.

The Design-Build Firm shall design the placement of CCTV cameras as follows:

1. CCTV at approximately 1 mile intervals
2. Provide unobstructed view both directions of travel on I-75
3. CCTV at interchanges to view all interchange ramps and the cross road
4. In advance of DMS and ADMS to allow RTMC operators to verify DMS/ADMS messages
5. Full CCTV coverage of the project to ensure that all portions of the roadway can be observed at an angle sufficient to discriminate between vehicles, regardless of the distance between the CCTV and the vehicle

The Design-Build Firm shall perform a 360 degree field of view video survey at the proposed camera height for each CCTV camera site utilizing a bucket truck and the Design-Build Firm's proposed camera. The intent of the video survey is to verify 100% CCTV coverage of I-75 freeway lanes, interchange ramps, and interchange crossroads to 1,000 feet from the centerline of I-75. The Design-Build Firm shall record the video survey for the Engineer's review and acceptance. The Design-Build Firm shall submit for review and approval, the video survey prior to the 90% ITS plan submittal.

The final location of the proposed CCTV shall also provide visual confirmation to the RTMC of the message (words and letters) on each DMS located within the Project. The CCTV subsystem concept in the RFP is based on at least 1 CCTV located between 300 feet and 600 feet from and having a clear view of the face of each DMS for message verification. The Design-Build Firm shall also locate a CCTV to verify messages on ADMS. The CCTV for ADMS message verification may be placed closer than 300 feet from the ADMS as long as the Design-Build Firm can demonstrate that the RTMC will be able to read the entire face of the ADMS with a clear image.

Any additional CCTV cameras and field elements required to obtain the coverage requirements described above shall be included in the Design-Build Firm's ITS plans and furnished, installed, integrated and tested at no additional cost to the Department.

The Design-Build Firm shall orient the CCTV camera on the pole to minimize occlusion of I-75 and the interchange crossroads and ramps. Two cameras may be installed on one pole if required to meet coverage requirements.

In addition to the requirements of Standard Specifications, Section 782-1, new CCTV cameras shall meet the following higher requirements:

1. The CCTV camera shall have a minimum 35x motorized optical zoom lens
2. The CCTV camera shall utilize Digital Signal Processor (DSP) technology to compensate for slight movements in the camera image.

The Design-Build Firm shall furnish and install local control interface units (LCIU) in all CCTV cabinets that provide the following:

1. Local/remote selectable that defaults to remote after 5 min of inactivity
2. Front panel pan/tilt/zoom control of the CCTV
3. Front panel BNC to allow technicians to easily interface the camera video
4. A front panel DB9 connection for RS-232 control of the camera while in local mode

The Design-Build Firm shall furnish and install new I-75 CCTV field components to meet CCTV spacing and roadway coverage requirements. For CCTV locations along I-75, typical camera-mounting height shall be 50 feet above the highest point of I-75 at the CCTV location. Camera-mounting heights exceeding 50 feet above the highest point of I-75 at the CCTV location shall be approved by the Department. CCTV cameras installed to verify ADMS messages shall be installed at least 20 feet, but not more than 30 feet, above the ground at the base of the pole. The Design-Build Firm shall specifically identify and request Department approval for any mounting height not within these requirements.

CCTV poles shall be constructed of length and stiffness that can meet the vertical placement and camera stability requirements and the following additional requirements:

1. CCTV poles shall meet the following requirements: All CCTV poles shall meet the requirements of Design Standards, Index 18111 or 18113.
2. The design criteria for the structural design of CCTV poles and foundations shall be based on the Department's Design Standards, Department's Structures Manual, Volume 9, and the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (LTS-5-M)* with current Interims. Poles shall be designed for a 3-second gust of 130-mile per hour (mph) with a design life of 50 years.
3. All CCTV poles measuring up to and equal to 75 feet in length shall be designed to have a maximum deflection not greater than 1 inch during wind speeds of 30 mph. All CCTV poles measuring more than 75 feet in length shall be designed to have a maximum deflection not greater than 1.5 inches in a 30-mph wind speed. This deflection shall be measured at the top of the support structure where the base of the pan-tilt device is attached.
4. Electrical ground: All CCTV poles shall be supplied with an electrical ground meeting the requirements of Standard Specifications, Section 785 and FDOT Design Standards, Index Number 18111.
    A. The CCTV pole shall be designed and constructed so that all wiring facilities meet the requirements of Standard Specifications, Section 785 and FDOT Design Standards, Index Number 18111. All hand holes, couplings, through-bolt holes, and ground wires shall be cast into the pole during the manufacturing process. The camera composite cable shall be placed in conduit inside the pole to keep camera cable lowering device cable from coming into contact and becoming tangled.
    B. The Camera Lowering Device (CLD) shall be mounted to a specially designed tenon bolted

to the top of the pole as required. All poles shall have a minimum inside raceway dimension of 4 inches at the tip of the pole. All poles shall be provided with a fish wire to facilitate cable installation.

Lowering devices shall be furnished and installed on all CCTV poles meeting Design Standards, Index 18111 and 18113.

The Design-Build Firm shall provide all equipment necessary to transmit full motion video images to the RTMC and bi-directional control of the camera through the FOC utilizing Ethernet technology.

Pole-mounted ITS cabinets shall be utilized to the extent possible. Where CCTV, DMS, ADMS, MVDS, and/or RWIS installations are in close proximity, one ITS cabinet shall be used for all ITS field elements, if possible. This requirement applies to CCTV located approximately 300 feet from the DMS as described above. The Design-Build Firm may use a single ITS cabinet for devices located farther than 300 feet apart to reduce construction and maintenance costs. For all combined ITS cabinets, the Design-Build Firm shall design, furnish and install power, communication, and/or composite cables based on the distance between field elements and on the capability of the cabling and grounding, lightning protection and surge suppression requirements described in MTR Section 4.5.10.

The Design-Build Firm shall also pay for any utility adjustments required for these CCTV field elements at no additional cost to the Department.

4.5.3. MVDS

The MVDS shall meet the requirements of FDOT Standard Specifications.

The Design-Build Firm shall furnish and install new MVDS field elements to meet the MVDS coverage requirements. The new MVDS shall be placed at no more than ½ (half) mile spacing and positioned so that speed, volume and occupancy of each through lane at the MVDS site can be detected and measured independently.

The Design-Build Firm shall place the MVDS on new concrete poles or other structures with rigid foundations. Other ITS field element structures (CCTV or DMS) shall be used for MVDS installations whenever possible to minimize the number of poles and ITS cabinets along the highway. When other existing structures are used for MVDS, the Design-Build Firm shall provide documentation to the DEPARTMENT that the structure is capable of accommodating the extra weight and wind load. All MVDS structures shall be tall enough to locate the MVDS dual beam detectors at the height above the roadway recommended by the detector manufacturer based on the distance from the travel lanes, number of lanes to be detected, and offset of the pole from the lanes.

4.5.4. DMS and ADMS

The DMS and ADMS shall meet the requirements of FDOT Standard Specifications, Section 781 INTELLIGENT TRANSPORTATION SYSTEMS – MOTORIST INFORMATION SYSTEMS.

The Design-Build Firm shall furnish and install DMS field elements as follows:

1. Two new DMS on new structures over I-75 on full or mid-span support structures
2. Two new ADMS on new structures on SR 56 and CR 54 approaching I-75

The Design-Build Firm shall submit the proposed DMS and ADMS locations to the Department for approval and shall demonstrate that the requirements of the MUTCD regarding minimum sign spacing are met. If a DMS or ADMS is proposed for placement on a structure with static guide signs, the Design-Build Firm shall demonstrate compliance with the MUTCD regarding numbers of signs and messages. The DMS and ADMS placements shall be closely coordinated with the both existing and proposed (see Section 3) signing.

The new DMS and ADMS shall meet the following requirements:

Table 4: I-75 DMS Requirements*

Requirement Description	I-75 DMS Values
Character Height	18”
Nominal Font Size	5 pixels wide by 8 pixels tall
Characters Per Line	21
Lines of Text	3
Full Matrix LED Display	150 pixels wide by 36 pixels tall
Pixel Color	RGB; 32,000 colors
Pixel Pitch	34 mm
LED Viewing Cone	30 degrees
Minimum Sign Intensity	12,400 cd/m^2
Enclosure Type	Walk-in
Support Structure Type	Full or Mid-Span

*DMS shall follow FDOT PPM, Volume 1, Chapter 7, Subsection 7.5.4.1

Table 5: SR 56 & CR 54 ADMS Requirements

Requirement Description	SR 56 & CR 54 ADMS Values
Character Height	As required by FDOT PPM, Volume 1, Chapter 7, Subsection 7.5.4.1
Nominal Font Size	5 pixels wide by 8 pixels tall
Characters Per Line	21 for SR 56/ 15 for CR 54
Lines of Text	3
Full Matrix LED Display	150 pixels wide by 36 pixels tall
Pixel Color	RGB; 32,000 colors
Pixel Pitch	34 mm
LED Viewing Cone	30 degrees
Minimum Sign Intensity	12,400 cd/m^2
Enclosure Type	Front-Access
Support Structure Type	Cantilever

DMS and ADMS field elements with walk-in enclosures shall meet the requirements of FDOT Design Standards, Index Number 18300, “Dynamic Message Sign Walk-in”. All DMS and ADMS shall be capable of displaying 32,000 colors using red-green-blue (RGB) LEDs.

ADMS may be positioned over the sidewalk and shoulder to minimize the length of the cantilever and to

minimize the traffic impacts of maintaining the ADMS by means of the front-access enclosure. In no case shall any portion of the ADMS be placed over private property. See the FDOT Plans Preparation Manual, Volume 1, Pages 7-31 for additional placement requirements.

The Design-Build Firm shall also pay for new publicly-owned right-of-way or utility adjustments required for ADMS installation at no additional cost to the Department.

4.5.5. HAR

Highway Advisory Radio (HAR) Subsystems shall meet the requirements of FDOT Standard Specifications, Section 781 INTELLIGENT TRANSPORTATION SYSTEMS – MOTORIST INFORMATION SYSTEMS.

The RFP identifies HAR Subsystem installations at each end of the Project. The Design-Build Firm shall provide final locations and furnish and install HAR that meet both the requirements of the FDOT Standard Specification Sections, the FDOT Plans Preparation Manual, Volume 1, Chapter 7, and the following.

1. Testing shall be conducted to confirm the 1650 kHz AM frequency is clear. Currently the 1650 KHz AM frequency is used by several districts and is recommended by the Central Office as it is reportedly free of interference statewide.
2. If the 1650 kHz frequency is not available at any proposed HAR location, the Design-Build Firm shall determine if other frequencies or locations are available and recommend to the Department a proposed design of the HAR transmitter and beacon signs accordingly.
3. The height of the antenna above the ground shall not exceed 45.5 feet.
4. Transmitter output shall not exceed 10 watts.
5. All automatic HAR-generated broadcast messages shall include the call sign of the station, usually WNNC526 or FDOT.
6. Provide full coverage of the project when activated.

The Design-Build Firm shall install HAR advisory signs with beacons in advance of locations where HAR transmitters are installed. At least 1 HAR sign shall be placed in advance of each HAR transmitter in each direction of travel. The HAR signs shall be spaced from other signs in accordance with MUTCD requirements. Sign supports will meet applicable FDOT Design Standards.

The HAR control system shall have the following messaging capabilities.

1. The Operator is able to post messages on up to 10 HAR units and the HAR units will broadcast the messages simultaneously
2. The Operator is able to select which HAR unit or units will broadcast the message
3. The Operator is able to post a specific message to 1, all, or any number of HAR units without re-recording the message
4. The Operator is able to post a unique message to any and all HAR units
5. Broadcast unique messages on all HARs
6. Broadcast unique messages on all HARs that are not broadcasting duplicate messages
7. Broadcast the same message on 2 adjacent HARs

8. Broadcast the same message on any number of HARs even if they are not contiguous to another HAR with the same message
9. Broadcast the same message on all the HARs

Temporary HAR alternative: It is the intent to have the benefit of a working "HAR" Subsystem within 180 days after construction NTP. The Design-Build Firm shall have the choice of using a "temporary system" or completing installation of the permanent system. Should a Temporary System be used, the capability shall be the same as those described for the permanent. If the Design-Build Firm chooses to use a Temporary HAR Subsystem, there shall be no cost to the Department. If a Temporary HAR Subsystem is used, the Design-Build Firm shall retain ownership of it when the project is accepted.

If Temporary HAR is not used, the HAR Subsystems shall be permanently installed and made fully operational, including integration, subsystem testing and training, within 180 calendar days after construction NTP to allow the RTMC to use the HAR Subsystems to provide lane closure and incident information during construction. The Design-Build Firm shall furnish all necessary servers, hardware, equipment and software and coordinate with the RTMC to integrate the HAR Subsystem communication, message control, and beacon control with the District's SunGuide^{TM} software so that the RTMC Operators post, activate, and deactivate HAR messages and HAR beacon sign flashers for the HAR installations. The ITS Operations Manager, or his designated representative, will perform the SunGuide^{TM} integration tasks with the guidance and coordination of the Design-Build Firm, as necessary. The Design-Build Firm shall coordinate with the Central Office and Southwest Research Institute (SwRI), as necessary, to facilitate the District integration activities. The Design-Build Firm shall provide to the ITS Operations Manager all necessary information and data to facilitate HAR Subsystem configuration and integration activities.

FDOT will be responsible for obtaining the HAR Subsystem licenses, but the Design-Build Firm shall coordinate the licensing and perform the necessary frequency interference analyses required to obtain the FCC licenses.

The Design-Build Firm shall maintain the HAR Subsystem during the life of the Project. Maintenance shall be both preventative as recommended by the manufacturer and responsive to trouble reports from the RTMC or other malfunctions identified by the Design-Build Firm or others.

HAR Subsystem warranties shall begin on the same date as other warranties required by this MTR, see Section 4.4.1.

4.5.6. RWIS

The Design-Build Firm shall comply with FDOT Standard Specifications, Section 781 – INTELLIGENT TRANSPORTATION SYSTEMS – MOTORIST INFORMATION SYSTEMS. The Design-Build Firm shall propose a RWIS environmental sensor station local site per FHWA-HOP-05-06/FHWA-JPO-09-012, RWIS Siting Guidelines dated November 2008 in the Reference Documents and RWIS white paper in the Attachments of the RFP. The RWIS shall include sensors to provide roadway visibility and wind (speed and direction), and be connected to the RTMC via FOC network being installed.

4.5.7. Power

As noted in Section 4.5.8, the Design-Build Firm shall optimize the number of ITS cabinets for economy of construction and maintenance. In addition, the Design-Build Firm shall apply the following criteria to

the design of the power service.

1. The power distribution shall support future expansion of the ITS network and ITS field elements
2. The power distribution system shall minimize the length of electrical conductors located in the right-of-way
3. The power distribution shall leave as much of the electrical network in the ownership of the commercial electrical supply company as possible
4. The number of transformers to be maintained by the Department shall be minimized

Electrical power design and plans shall include the following.

1. Electric service panel in the cabinet, based on electrical load of the cabinet
2. Electrical power shall be designed based on the connected loads of the ITS field element(s), including, the UPS battery charging loads, and other electrical equipment at each ITS field element location. To accommodate for the convenience outlet, and additional 9 Amps of load shall be added at farthest cabinet from the service
3. Step-up or step-down transformers as needed for each location
4. Loads and voltage drops shall be calculated per NEC requirements
5. The maximum voltage drop from the service to each cabinet outlet shall not exceed 5% including the service outlet load of 9 Amps
6. Accommodate grounding, lightning, and surge protection for all electrical subsystems
7. Plans shall clearly show all electrical requirements, loads, wire sizes, grounding, lightning, and surge protection, meters, disconnects and all elements necessary for a complete and functional design
8. All electrical cabling shall be new copper cabling

The Design-Build Firm shall be responsible for contact and coordination with the commercial electrical companies along the Project corridor. The Design-Build Firm shall work with the electrical companies to designate locations of electrical sources to provide new and adjusted electrical service as required for the Project. The Design-Build Firm shall pay all necessary fees and expenses required by the commercial electrical companies to establish new electrical power and for adjustment of existing service. The Design-Build Firm shall work with District Seven to establish billing addresses for each new power service location along with the responsible party for future bills. The Design-Build Firm is responsible for interim electric service fees and bills and shall pay for all electrical service fees until Final Acceptance of the Project. Along with other as-built documentation, the Design-Build Firm shall provide electrical calculations and other details of the implemented power service to the Department including the GPS location of each power source.

Power conduits shall have smooth walls and be sized adequately, as determined by the overall cable diameter and recommended percentage of fill of conduit area, per requirements in the latest NEC and FDOT Standard Specifications, or a minimum of 2” conduits, whichever is larger.

The power cables shall be adequately sized per requirements in the latest NEC and Project Requirements.

Power cables shall be marked with 1 tag indicating direction or exit from underground facilities (i.e., vaults, primary junction boxes, service holes, manholes, secondary junction boxes, transformers). This tag shall indicate the general direction of the cable(s) to the next facility where the cable is located. The

Department must approve the tags used before the procurement and installation. All tags shall be labeled with the next point of connection (i.e. transformer 1 to transformer 2). All equipment shall be numbered prior to tagging the cable to be accurate. The Department, prior to energizing, will inspect the tagging.

The power subsystem shall contain readily accessible, manually resettable or replaceable circuit protection devices (such as circuit breakers or fuses) for equipment and power source protection.

Coordination of protection devices is required to minimize interruption of electrical service to other areas of the power system. The system shall be designed so that the protective device closest to the fault operates first.

All ancillary components shall be delivered along with the needed cables and connectors for power and communication. All installations and wiring shall meet the requirements of the NEC, and NESC. Grounding shall be in accordance with the requirements of NEC Article 250 and FDOT Standard Specifications, Section 785.

4.5.7.1. Transformers

When the commercial power is not supplied with the correct voltage or phasing, the Design-Build Firm shall design, construct, install and integrate the transformer (Power Feed Transformer) at each commercial power supply location to convert the power supply from the Utility Company(ies) to the appropriate secondary voltage single phase power and with suitable wire sizes that are capable of providing power to the operations of ITS field elements within the Project. The transformer shall be equipped with two 2.5 percent taps above and two 2.5 percent taps below normal voltage. All taps shall be full capacity taps. However, the Design-Build Firm shall not include the plus or minus tap in the voltage drop calculations during the design of the power subsystem.

The Design-Build Firm shall design, construct, install and integrate the transformer (ITS field element Transformer) at each of the ITS field element location cabinets to step-down from the voltage supplied from the underground distribution wire to the 120/240v power requirement for that location.

4.5.7.2. ITS Electrical Conduit, Pull and Junction (Splice) Boxes

Electrical conductors shall not be placed in the same conduit, pull box or splice (junction) box as FOC. The Design-Build Firm shall furnish and install ITS electrical conduit and pull/splice boxes for non-fiber optic wiring needs (power, communication, etc., for ITS). The Design-Build Firm shall meet the following requirements.

1. Detail type, size and quantity of ITS electrical pull/splice boxes on the Plans.
2. Provide installation details including connections with conduit in compliance with Standard Specifications, Section 635 and Design Standards Index numbers 17721.
3. Ensure that box construction includes internal reinforcement by means of steel or fiberglass, or a combination of the two. Ensure that the splice box is equipped with a nonskid cover secured by hex head bolts; cable racks and hooks; pulling eyes; and any other miscellaneous hardware required for installation.
4. Address site restoration and disposal of excavated materials.
5. Use only equipment and components that meet the requirements of these MTR, which are listed on the Department’s APL.

6. ITS electrical pull/splice boxes shall meet the requirements of FDOT Standard Specifications, Section 635.
7. ITS electrical pull/splice boxes shall be a minimum of 24 inches long by 18 inches wide by 12 inches deep. Ensure that the pull/splice box is large enough to house non-fiber cables, as required, without subjecting the cables to bend radii less than industry standards for the types and diameters of cables in the box. Ensure there is enough room to provide any necessary cable splicing. Ensure the boxes are large enough for storage of slack cable.
8. Ensure that all pull box and splice box covers include the words approved by FDOT permanently cast into their top surface. Ensure that the manufacturer's logo is stamped on each pull box cover, along with the Department's APL approval number. Ensure that markings are permanently affixed and clearly visible after installation.
9. The Design-Build Firm shall develop specifications in accordance with industry standards to:
    A. Address cable placement and spacing in accordance with industry recommendations for the types and sizes of cables used on the Project
    B. Address bonding and grounding per FDOT and industry standards.
10. Provide supplemental electronic box markers in each ITS pull/splice box.
11. Meet Guaranty provisions in accordance with FDOT Standard Specifications, Section 5-1, including any longer warranties provided by manufacturers.
12. Provide locking and security systems on electrical ITS pull/splice boxes to prevent theft of copper cable. The security system shall include, as a minimum, a system for securing the lid that includes hardened metal bars or other cover and locks with unique keys that are not available in the consumer marketplace. Ten keys shall be provided for the RTMC. The keys shall be delivered to the District upon Final Acceptance. The security system shall also include a 12-inch thick concrete mowing apron, supplemental security locking systems, and/or other systems designed and proven to deter theft. The Design-Build Firm shall submit the locking and security systems to the Department for review and approval with other required design submittals.

4.5.8. Cabinets

New ITS cabinets shall meet the requirements of FDOT Standard Specifications, Section 785 INTELLIGENT TRANSPORTATION SYSTEMS – INFRASTRUCTURE.

Place cabinet away from ditches and low-laying areas.

In order to minimize construction and maintenance costs, the Design-Build Firm shall optimize the number of ITS cabinets installed along I-75. CCTV sites dedicated for DMS monitoring and MVDS only sites will be allow to communicate and obtain power over multiconductor copper cables to the nearest ITS cabinet. Power and communication multiconductor cables shall include RS-485/422 cable and other cabling as approved by the Department.

A Calibration/SPD cabinet shall be installed at the CCTV sites dedicated for DMS monitoring and MVDS only sites. The Calibration/SPD cabinet shall have local access to the CCTV and MDS for configuration, maintenance, and testing. Calibration/SPD cabinet shall meet the following requirements.

1. SPD devices for all copper conductors
2. An RS-232 connection at MVDS sites. This connection shall be separate from the MVDS connection to the nearby ITS cabinet.

3. Pole mounted with bottom of the TVSS cabinet 4 feet above the adjacent ground surface.
4. When pole mounted, orient cabinet to avoid conflicts with lowering camera
5. Mounted with stainless steel banding
6. All conduit connections shall be “liquid tight” and weatherproof
7. Grounding and surge suppression according to Florida Standard Specifications, Section 785, and this MTR.
8. Fabricated from 5052 H32 0.125” aluminum
9. Minimum dimensions: 13.125” tall, 10.75” wide, 10.5” deep
10. Locking door, keyed to standard lock type #2A, with 2 sets of keys per box
11. Neoprene gasket door seal
12. Foldable Laptop Computer shelf with a minimum 12" depth
13. Electrical breakers for each MVDS and CCTV component. The breaker shall be sized per CCTV and MVDS manufacturer recommendations.

ITS pole mounted cabinets shall be used whenever possible. Minimum size of pole mounted cabinets shall be type 336S. When ground-mounted cabinets are used, they shall be type 332 and located outside the clear zone and protected against flooding. Sunshields shall be provided for each cabinet. The Design-Build Firm shall utilize ITS cabinets of appropriate size based on the ITS field elements associated with the cabinet. The Design-Build Firm shall provide ITS cabinet interior spaces that are sized and organized based on the ITS field elements associated with the cabinet. ITS cabinets shall be provided with adequate space and equipment for multiple ITS field elements (CCTV, MVDS, DMS, RWIS, HAR) to minimize the number of ITS cabinets deployed.

All new ITS cabinets shall include cabinet locks keyed to a standard #2 key as required by Standard Specifications, Section 785. At least 1 lock per cabinet on the job is to be provided. Three keys for CEI staff plus a sufficient number to provide access to the Design-Build Firm shall be provided. All keys and locks shall become the property of the Department at the end of the construction job. All keys shall be turned in to the FDOT Project Manager before Final Acceptance, except that Design-Build Firm shall retain enough keys during the 90-Day Maintenance and Warranty Bond period to perform any needed repairs. At the end of the 90 days, the Design-Build Firm shall return all keys to the Department.

The Design-Build Firm shall furnish and install rebootable PDU that are remotely manageable via web browser and are 19 inch rack mountable in all ITS cabinets to allow District Seven to “reboot” cabinets from the RTMC.

4.5.9. UPS

The Design-Build Firm shall install a new UPS at each ITS cabinet. Each UPS shall supply all electronic components housed in and associated with ITS field element cabinets with uninterrupted power for a minimum of 2 hours in the event of power loss. At a minimum, the UPS in DMS cabinets shall provide 2 hours of continuous power for a DMS displaying 3 full lines of text plus operation of all other equipment in and connected to the cabinet, including fans and lights. Each UPS shall be sized according to the maximum expected load for each cabinet plus 50 additional Watts. The service outlets shall not be connected to the UPS.

The UPS batteries shall include a 5-year full replacement warranty. The warranty shall cover the cost of

new batteries if the battery capacity falls below one half of the original battery capacity. The warranty shall also cover the shipping cost to and from the manufacture.

The UPS shall provide commercial power pass through during all failures of UPS. The Design-Build Firm shall ensure that the UPS is generator compatible to ensure clean, uninterrupted power to protected equipment when generator power is used.

The UPS shall include an Ethernet base SNMP network management interface to determine operational status of the UPS, the internal UPS temperature, and the external temperature as recorded by a remote sensor mounted elsewhere in the ITS cabinet. All UPS shall be designed and configured to e-mail events such as power loss, battery levels, and power returned to the District RTMC**.**

4.5.10. Grounding, Lightning, and Surge Protection

The Design-Build Firm shall comply with FDOT Standard Specifications, Section 785, INTELLIGENT TRANSPORTATION SYSTEMS – INFRASTRUCTURE, regarding grounding, lightning protection and surge protection and applicable Design Standards. The Department will consider value-added proposals from the Design-Build Firm that include additional grounding, lightning, and surge protection that can be demonstrated to cost effectively reduce the Department's on-going maintenance and replacement costs for ITS field elements due to lightning and electrical surge events.

4.5.11. Environmental Requirements

All subsystem ITS field elements and ancillary components, while housed in their associated environmental enclosures, shall, at a minimum, comply with all applicable NEMA TS II (latest edition) environmental specifications and Project Requirements.

All enclosures, structures, poles, and mounts shall be designed to withstand sustained wind loads and wind gust factors in accordance with all appropriate FDOT and District Seven standards.

The Design-Build Firm shall use manufacturer-recommended storage, handling and installation methods to ensure that all new and relocated ITS field elements and ancillary components have complete protection from moisture and airborne contaminants, blowing rain at storm rates, wind, blowing sand, blowing dust, temperature, humidity, roadside pollutants, vandalism and theft of equipment. Fatigue failures, internal moisture, corrosion, internal dust, and fungal growths noted during Department inspections shall be evidence that ITS field elements have not been properly protected or maintained and will be cause for the Department to reject any ITS field elements and ancillary components until they are replaced or satisfactorily maintained or repaired.

The Design-Build Firm shall provide appropriate enclosures to prevent pests from attacking and damaging the subsystem ITS field elements and ancillary components.

4.5.12. FDOT SunGuideTM Software Development Project

All available information can be found at the SunGuide^{TM} Project Website:

- http://www.dot.state.fl.us/trafficoperations/ITS/Projects_Arch/SunGuide.shtm

The Design-Build Firm shall provide new, and upgrade existing, ITS field component software and firmware to be compatible with the latest SunGuide^{TM} requirements. See requirements for individual ITS

field components for additional details.

4.5.12.1. SunGuide™ Software Compatibility & Integration

The I-75 ITS field devices are to be operated from the RTMC using the SunGuide™ software system. The Design-Build Firm shall integrate the individual ITS field elements (i.e., CCTV cameras, H.264 decoders, DMS, ADMS, MVDS, serial and Ethernet communication devices, HARs and beacons and RWIS) with the respective vendor-provided subsystem software such that each of the subsystems shall be operated as a stand-alone system. This configuration will form the basis for Part 1 of the Subsystem Tests. Once Part 1 of the Subsystem Tests are complete and the results approved by the Department, the Design-Build Firm shall provide all integration and configuration data and settings so the Department can integrate the ITS field elements into the existing SunGuide™ central software and Core Layer 3 Ethernet Switches. As soon as possible, after completion of Part 1 of the Subsystem Tests, the Design-Build Firm shall provide to the District RTMC Manager all necessary information and data to facilitate the District's RTMC configuration and integration activities. The District shall complete Core Layer 3 Ethernet Switch and SunGuide™ integration and configuration within 14 calendar days of receipt of the configuration and integration data and information from the Design-Build Firm. After SunGuide™ integration is completed, the Design-Build Firm shall conduct Part 2 of the Subsystem Tests.

The Design-Build Firm shall provide all the temporary central equipment, including the workstations or laptop computers, necessary for the Part 1 testing of the individual subsystems.

Prior to the Final Acceptance, the Design-Build Firm shall demonstrate to the Department that all of the equipment specified in this MTR that were installed and configured by the Design-Build Firm flawlessly operates from the SunGuide™ client workstation located at the RTMC.

The integration of the various subsystems with the SunGuide™ software shall be the responsibility District. The Design-Build Firm shall coordinate with the RTMC and provide the following services.

1. Conduct a site survey to prepare the creation of the system database, configuration files, system graphics, and other preparatory work for the integration of the SunGuide™ software
2. Troubleshoot any Design-Build Firm-installed field hardware issues that affect the integration work
3. Furnish and install the field hardware and software required to operate the SunGuide™ software
4. Provide ITS field device information, such as equipment configuration diagrams, IP addresses, protocols, and documentation (e.g., users' manual, troubleshooting guide, etc.)
5. Configure the ITS field devices for integration with the SunGuide™ software, including link, lane, roadway, and device configurations
6. Provide post-installation services after testing the SunGuide™ software. The services shall include providing documentation to allow the District to perform SunGuide™ integration tasks, including but not limited to, populating the tables and creating map links
7. Meet with the Department to validate all required documents

All the licenses for the above products shall be transferred to the Department. The installation media for the above products shall be provided and shall become the property of the Department after installation.

4.5.12.2. Device Protocol Compliance

For the devices being deployed, the Design-Build Firm shall ensure that the protocol used by the devices to be controlled by the SunGuide™ software is compliant with the protocols listed online at:

- http://sunguide.datasys.swri.edu/ReadingRoom/Etc/SunGuide%20Protocol%20Support.htm

The Design-Build Firm may propose alternate ITS equipment; however, the Design-Build Firm shall be responsible for developing the drivers for these devices for integration into the SunGuide™ software. The drivers for any devices shall conform to the latest SunGuide™ Interface Control Document available at

- http://sunguide.datasys.swri.edu/

to ensure compatibility for integration with the SunGuide™ software. The Design-Build Firm shall coordinate with the SunGuide™ software developer in developing the device drivers. Any drivers developed by the Design-Build Firm for the Project shall become the property of the Department upon Final Acceptance.

4.5.12.3. Network Infrastructure

The Design-Build Firm Integrator shall meet with the FDOT ITS Operations Manager prior to any network-related or integration work being done on the Project. This Pre-Integration meeting is to discuss any issues, concerns, and the Design-Build Firm's plan to minimize the impact to the existing ITS. The Design-Build Firm shall provide detailed overview of the schedule for bring ITS field elements onto the network so the District can schedule their resources to configure the RTMC servers and switches in cooperation with the Design-Build Firm's schedule. Once network and integration work begin, the Design-Build Firm shall meet with the District ITS Operations Manager, or his designated representative, weekly or at other frequencies agreed upon in writing by the Department to discuss and coordinate integration activities. The Design-Build Firm shall provide a minimum of a two-week look-ahead of integration activities at each integration meeting. The Design-Build Firm shall designate an integration/network schedule coordinator. The integration/network schedule coordinator shall be responsible for coordinating and scheduling all network and integration activities that involve the RTMC.

4.5.12.4. Device Worksheets

The Design-Build Firm shall coordinate with the District ITS Operations Manager to collect and provide the required information about each device that is to be utilized by the SunGuide™ software. Examples of information for CCTV cameras and DMS components are identified below. Other devices shall require similar information to be provided. The Design-Build Firm shall coordinate with the District ITS Operations Manager for the exact information to be provided for these devices.

These device worksheets shall be used to update the RTVM and as tracking sheets for the ITS devices included as part of the I-75 FMS system. The Design-Build Firm and the ITS Operations Manager shall participate in a Pre-Integration Meeting to discuss the expectations of both parties during the Integration portion of the Project.

Table 6: CCTV Camera Data Configuration Documentation Requirements

Data	Description
Camera Name	The data identifies the unique name of each camera.

Data	Description
Center ID	The data identifies the unique name of the center where each camera resides.
Protocol	The data specifies the protocol (values: SNMP, SNMP (PMPP)) for each camera.
Poll Process	The data provides the name of the driver for each camera.
Manufacturer	The data identifies the manufacturer of each camera.
Location Description	The data describes where each camera resides.
Roadway	The data identifies the roadway where each camera resides.
Direction	The data identifies the direction of the roadway where each camera is installed.
Latitude	The data identifies the latitude where each camera resides.
Longitude	The data identifies the longitude where each camera resides.
Op Status	The data identifies the operational status (values: Active, Error, Failed, OutOfService) of each camera.
Address Type1	The data identifies the address type (values: pmppAddress, commAddress) for each camera. (If pmppAddress, then the camera uses SNMP (PMPP); if commAddress, then the camera uses SNMP.)
Address Type2	The data specifies the address type (value: portServerAddress) of Address Type 2.
Address	The data identifies the device address of each camera.
Port Server IP	The data identifies the IP address for the port server where each camera resides.
Port Server Port Number	The data identifies the port number for the port server where each camera resides.
Community Name	The data identifies the community name for each camera.
Attach to Video Device	If selected, additional IP video parameters must be supplied.

Table 7: IP Video Data Documentation Requirements

Data	Description
Video Device IP Address	The data identifies the IP address for the encoder.
Blackout	The data determines if the camera is restricted.
Video Device Type	The data identifies the video device type (IP video device) for the encoder.
IP Streaming Driver ID	The data identifies the unique IP video switch driver name.
Card Number	The data identifies the card number for the encoder.
Manufacturer	The data identifies the manufacturer values of the encoder.
Model	The data identifies the model of the encoder.

Data	Description
Streaming Type	The data identifies the streaming type (values: elementary, transport, program) for the encoder.
Secondary Interface	The data identifies the secondary interface for the encoder that enables users to maximize the number of inputs for the encoder.
Snapshot Requested	The data determines if snapshots are generated for the encoder.

Table 8: DMS/ADMS Data Configuration Documentation Requirements

Data	Description
Sign Name	The data identifies the unique name of each DMS.
Center ID	The data identifies the unique name of the center where each DMS resides.
Protocol	The data specifies the protocol (values: SNMP, SNMP (PMPP), SunGuide™ (for Trailblazers) for each DMS.
Connection Type	The data specifies how each DMS is connected to the network (values: Direct, Modem, Long Distance Modem).
Poll Process	The data specifies the name of the driver for each DMS.
Packet Timeout	The data identifies the amount of time the driver will wait on a response from a DMS before timing out. The recommended time is 5 seconds.
Packet Retry Limit	The data identifies how many times a packet is attempted before it errors out. For most signs, the recommended number is 2; for signs prone to errors, this number can be increased.
Command Retry Limit	The data identifies how many times a command is attempted before it errors out. A command consists of multiple packets. The recommended number is 1.
Op Status	The data provides the operational status (values: Active, OutOfService) for each DMS.
Manufacturer	Values: Name of the sign manufacturer.
Number of Lines	The data identifies the number of displayable lines for each DMS.
Number of Columns	The data identifies the number of characters that can be displayed using a normal font.
Beacons	The data identifies whether the sign has beacons and, if so, specify the beacon address.
Beacon Address	The data identifies the address where the sign receives activate/deactivate beacon requests.
Day Brightness Level	The data identifies the numeric value for the brightness setting during the daytime.
Night Brightness Level	The data identifies the numeric value for the brightness setting during the night time.

Data	Description
Font	The size of the font currently displayed. Represented in horizontal pixels by vertical pixels. (Example: 5 pixels x 7 pixels)
Sign Type	Values: Fiber Optic, LED, Flip-Disk, Shutter
Location Description	This is a text field describing the location of each DMS.
Roadway	The data identifies the roadway where each DMS resides.
Direction	The data identifies the direction of the roadway where each DMS resides.
Latitude	The data identifies the latitude where each DMS resides.
Longitude	The data identifies the longitude where each DMS resides.
Address Type 1	The data identifies the address type (values: PMPP, SunGuide™) for each DMS. (If PMPP, then the DMS protocol should be SNMP (PMPP); if SunGuide™ or manufacturer specific, then the DMS should use the same protocol name.)
Address Type 2	The data identifies the specific address type (values: Direct, Port Server, Dialup) of Address Type 2.
Address	The data identifies the device address for each DMS.
Community Name	The data identifies the community name for each DMS.

Table 9: DMS with TCP/IP Data Configuration Documentation Requirements

Data	Description
Port Server IP Address	The field identifies the IP address for the port server where each DMS resides.
Port Server Port Number	The field identifies the port number for the port server where each DMS resides.

The Design-Build Firm shall be responsible for providing all data necessary to populate the SunGuide™ database. The Design-Build Firm shall provide this data to the ITS Operations Manager. The ITS Operations Manager, or his designated representative, will enter the appropriate data into the SunGuide™ database at the RTMC under the oversight of the Design-Build Firm. At no time shall the Design-Build Firm be granted SunGuide™ administrative rights or access to the Department's RTMC SunGuide™ system.